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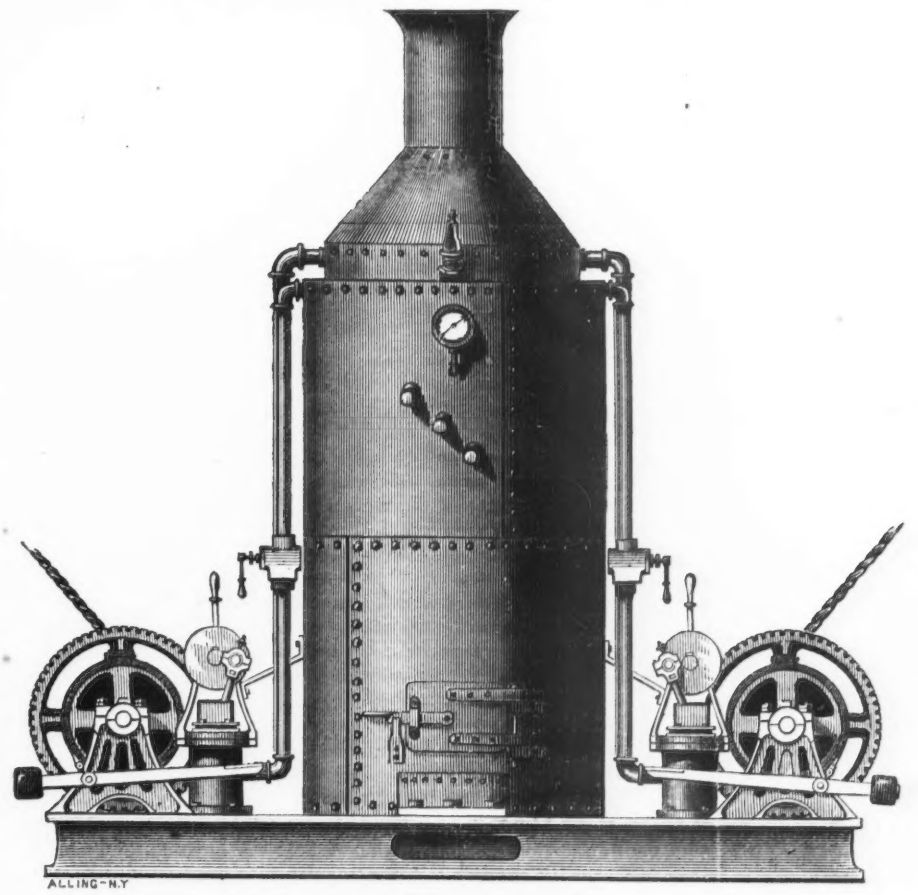
Hoisting Machinery.

THE accompanying illustration represents another form of the hoisting apparatus designed by Mr. EARLE C. BACON, and manufactured by the Morris County Machine and Iron Company, No. 36 Cortlandt street, N. Y. The boiler and engines differ only in the way in which they are combined from the hoisting apparatus which we illustrated a couple of weeks ago.

In the present engraving it will be noticed that an engine is placed on either side of the boiler, which is made of sufficient capacity to supply both engines at the same time. By this arrangement in a quarry, for example, stone can be hoisted on two derricks at the same time. When it is desirable to discharge the cargo of a vessel in a hurry—and by the way when is it not desirable?—work can go on from two batches at once. There are other purposes, such, for example, as use at blast furnaces, etc., which will suggest themselves to the engineer, where such an arrangement would be exceedingly convenient.

With regard to the quality of the work on these engines we can only repeat our former remarks on the subject. The engines and boilers are tested before they leave the shop, so there is no danger of the purchaser getting an imperfect machine. Other styles of hoisting machinery are made by these manufacturers, whose speciality is in this kind of line, and they are, we are informed, prepared to design and build hoisting engines for any special purpose.



BACON'S HOISTING MACHINERY.

Notes on Lead Smelting in Utah and Nevada.

BY O. H. HAHN, M. E.

(Concluded from page 82.)

THERE are a great many other promising smelting districts in the State of Nevada, but the smelting operations carried on there do not differ materially from those already described.

Most of the lead-ores of Utah differ in this particular from those of Nevada, that the prevailing gangue is quartz. Calcareous ores are, however, also found in considerable quantities in East Cañon, Little Cottonwood and Bingham Cañon. The latter place offers the most striking instance of the occurrence of quartzose ores. They lie in a disintegrated quartzite, which intersects a stratified limestone, probably pertaining to the Devonian age. The great bulk of them are the carbonates and sulphocarbonates of lead, carrying from 15 to 30 grains of silver, with streaks of galena varying in silver contents. A large portion of the ores show traces of gold. Of accessory minerals, small quantities of sulphurets of iron, oxide of iron and clay-ironstone may be named. There are at present two smelting establishments in Bingham Cañon, that of Messrs. BRISTOL & DAGGETT, and that of the Utah M. & S. Co. Lim., both of which work ores from their mines and also do custom work. The former is very conveniently located at a hill side below their own mine, the Winamuck, from which the ore is chuted down on a planked ore-floor, forming part of the housed-feeding floor. The different classes of ore delivered to the works are thrown through a screen; the coarser pieces are run through a Brodie crusher and reduced to walnut size. Previous to smelting, the ores are mixed by weight so as to produce a bullion of a certain standard.

The Company's furnace is a circular one of the Piltz pattern with eight tuyeres of two inch muzzle. It is fourteen feet high from tuyeres to throat, three and a half feet diameter in the level of the tuyeres, and five feet at the top. The hearth forms a hexagon on the outside and is enclosed by six cast-iron plates one and a half inch in thickness. The two nearest the dam-plate are provided with slots for tap-holes. The upper part of the furnace, made of brick work, rests on a cast-iron flanch which is borne by four hollow cast-iron pillars. The part below the flanch is of Utah sand-stone thirteen inches thick, lined inside with four inches of Pennsylvania fire-brick. The motive power comes from a ten inch cylinder stationary steam-engine with twenty-five horse-power locomotive boiler. It drives a Brodie crusher and a No. 4 Root's blower. The efflux-pipe of the latter is provided with a safety-valve and a wind gauge, by which the pressure of the blast is measured in inches mercury.

An open bulkhead adjoining the ore-floor holds about 30,000 bushels of charcoal.

The manipulations at this furnace do not differ much from those anywhere else; only, in lighting up, the proceedings are a little different. After the hearth is heated up sufficiently, a suitable quantity of lead is introduced through the front; then the furnace is filled up with coal in the usual manner. As soon as the coal has reached to within five feet below the throat, slag is charged in portions of one pound of the latter to one pound of charcoal. When the charge is in the level of the throat, the blast is turned on. About 1000 pounds of well-flown slag picked out for that purpose, are fed before commencing with light charges of ore.

At the time Mr. HAHN had charge of these works, the ores at his disposition were:

I. Carbonates of lead from the Spanish mine, with from 28 to 30 per cent. of quartz, 55 to 60 per cent. of lead, and $22 silver, per ton.

II. Carbonate ores from the Winamuck mine, with 30 per cent. of quartz, 35 per cent. lead, and about $80 silver and gold.

III. Ferruginous dry ore from Winamuck mine, with 38 per cent. silica and alumina, 27 per cent metallic iron, and $65 silver and gold.

IV. Same ore, with 45 per cent. silica and alumina, 23 per cent. metallic iron, and $80 silver and gold. Ore No. 1 was the principal one smelted, occa-

sionally No. 2 which is of the same character, and No. 3, were added; No. 4 was reserved for assorting. The furnace worked well and without the least difficulty, when the ore was mixed with

40 per cent. of a tolerably pure hematite from Lehi,
20 " " " limestone, and
30 " " " slag.

The slag produced was stiff, and resembled a bisilicate. A decrease in the percentage of slag added to the smelting mixture, was always accompanied by evil consequences. The resulting slag in that case, was dry, short, and would soon stop running. A diminution of the iron ore and increase of the limestone also worked unfavorably, and the more so, the less oxide of iron was in the smelting mixture. Pure silicates of lime cannot be perfectly liquefied by the temperature prevailing in a lead-furnace.

The tapping is done in the old manner, by piercing the tap-hole with a bar as soon as the lead has risen to the slag-spout. The tap-hole is just high enough above the bottom of the hearth, to leave a suitable quantity in the latter. After tapping, the hearth is cleared from cinders and other accretions.

The production of matte is not noteworthy.

The normal charge was:

5 scoops a 1.1 bushels or 18 pounds = 90 pounds.
15 shovels of lead ore a 15 pounds = 225 pounds.
6 shovels of ironstone a 13 pounds = 78 pounds.—partially Winamuck ore No. 3.
4 shovels of limestone a 13 pounds = 52 pounds.
3 shovels of slag a 10·5 pounds = 31·5 pounds.
386½ pounds.

The proportion of coal to smelting-mixture is as 1 pound to 4·3 pounds, and to ore as 1 pound : 2·3 pounds—1 ton of ore to 50 bushels of coal.

In twenty-four hours, under a pressure of from 1½ to 2 inches mercury, 140 charges were run through the furnace, corresponding to 27 tons of smelting-mixture, or 15¾ tons of ore, from which resulted 7 tons of lead, carrying between 60 and 80 dollars of silver, per ton.

The lead is shipped to Chicago for parting.

The number of hands required was:

3 smelters at $5 per day.
6 helpers at $3 "
3 feeders at $3 "
2 engineers at $4 and $3 per day.
1 blacksmith at $3 "
1 coal receiver at $3 "
4 roustabouts at $2 50 "

Three helpers could be saved by providing the furnace with an automatic tap.

The ores of the Utah M. & S. Co., Lim. are precisely of the same character as those of the Spanish mine, viz., very poor and siliceous. At the time I visited those works, nine classes were made, for what purpose I did not learn.

The charge was as follows:

2 baskets of coal a 2½ bushels = 90 pounds.
6 shovels of ore (chiefly leadhillite) = 90 pouds.
2 shovels of iron ore = 26 pounds.
2 shovels of limestone = 26 pounds.
2 shovels of slag, about = 30 pounds.
172 pounds.

This is at the rate of 111 bushels of coal to 1 ton of ore, or 57·7 bushels to 1 ton of smelting-mixture. This proportion is exorbitant, but it was all that could be done under the circumstances, the ore being poor in lead, and the iron-ore, though scrupulously assorted, very siliceous. Assuming that 140 charges passed the furnace within twenty-four hours, its capacity would be 6 tons 600 pounds of ore, from which 2 tons 200 pounds of lead resulted. Under a higher pressure of the blast like that at the Winamuck furnace, the capacity of the latter could be attained.

The furnace then running was a six-sided one, with 5 tuyeres of 2½ inch muzzle and mechanical feeder, supplied with blast by a No. 8 Sturtevant blower. But there was a larger one in the course of construction, an exact copy of No. 5 at the Eureka Cons. Co's. works.

BUELL & BATEMAN'S works at the mouth of the Little Cottonwood Cañon, consist of two circular Piltz furnaces of the same dimensions as the one of the Utah Mining and Smelting Co. Lim. They have been running extremely irregularly during the summer, and as near as I have been able to ascertain from the best authority, at a decided loss. The manipulation of the furnace does not differ materially from that of similar furnaces elsewhere. The ores smelted are those from Little Cottonwood Cañon, which are decidedly basic.

There are a number of other furnaces in the different Utah districts, but none have been running to any advantage so far. A single exception, are perhaps the small works of JENNINGS, near Salt Lake City. In regard to these, however, the data for description are yet wanting.

Car Propulsion by Pneumatic Power.

By JAMES A. WHITNEY, Mechanical Engineer.*

Conclusion.

About the same time another trial on a large scale was made with a brick tunnel six hundred yards long, nine feet in height, and eight feet in width. The carriage was fitted with a fringe of bristles reaching nearly to the brickwork to reduce windage, and the twenty-foot fan by which the blast was furnished was driven by an old locomotive engine jacked up, and with belt-wheels substituted for its drivers. Only a small portion of this line was level; it had at one place a gradient of one in fifteen and curves of only eight chains radius. The car traversed the whole distance in fifty seconds, with an atmospheric pressure of two ounces and a half to the square inch. On the whole, without adverting to more extended or more recent trials, it may be assumed that, years ago, experience demonstrated the feasibility of propelling cars through tunnels by atmospheric pressure at from twenty to forty miles an hour, while theoretically, by the use combined of an air-blast and vacuum, the probability of securing a speed nearly or quite twice as great is apparent. But in the running of cars for a distance equal to that between the upper and lower parts of Manhattan Island, numerous details would require to be worked out and adjusted to secure the practical success of the system. Among these would be that of arranging for the stopping of one car or train without interference with others in motion along the route, and which in the use of a vacuum would necessitate the adoption of a plan equivalent to the valve-separated sections of Clegg and Samuda in their otherwise quite different plan. It is true that, by the use of an air-blast only, a continuous line of cars might be propelled by what might be termed the moving air cushion throughout the tube, but in the event of the stoppage of the foremost on the line, danger of collision from those behind would be imminent. It is possible that modifications of the turnouts applied in pneumatic tubes for the transmission of parcels could be applied in those for passenger transit. That of Needham, an American invention, brought forward during the past few years, comprised a circuit tube, with ends connected at a suitable distance apart with the main or transit tube, and used in connection with valves which shut off, in the space between the ends of the circuit tube, a portion somewhat longer than the carrier or piston. One of the valves was shut in front until the carrier, cushioned by the air in front, was stopped. The other valve in rear was then closed, the blast being thus directed through the circuit tube around the inclosed portion of the main tube. The top of such portion, hinged for the purpose, was then opened to admit access to the carrier. With the circuit tube entering the main at a slight angle, and with automatic switch-operating mechanism to shift the rails, there seems no good reason to doubt that, by means substantially like those just detailed, cars in an eight or ten foot pneumatic tube could be stopped at stations without interfering with the continued passage past of cars previously behind them in the tube.

The points to which reference has just been had wherein the development of improvements is still required, are not so abstruse as to leave any doubt as to the practicability of securing them, neither can there be much doubt as to the conditions, and the sole conditions, under which the system can be applied in New York and other cities. That pneumatic tunnels, of only a few feet diameter, dark in spite of gas-jets, and damp in spite of the ever fresh current of air, are not adapted to popular needs and wishes, is shown by the fact that the projectors of the Broadway Tunnel are already agitating for the privilege of making a tunnel thirty feet in width, in which this plan of pneumatic propulsion will prove inadmissible. That its use on the surface is out of the question is manifested at a glance. There remains, then, only an elevated railway as affording an opportunity for its use, and with such it would prove superior to any other method of propulsion yet suggested. Let an elevated pneumatic tube be carried over the buildings and cross-streets, sustained on iron supports constructed on the principle of a suspension bridge over each block; let this tube be of wrought iron for strength and lightness; lined with wood for moderate warmth and for reduction of friction to the air-blast; glazed throughout its length with panes of sufficient size and numbers to light it well, furnished with turnouts, to enable one car to be stopped at every station without interference with the others; furnished with electric signals automatically actuated by the cars themselves to indicate their approach to the stations; and place the working of the line, from the lowest duty to the highest, in the hands of educated, careful and properly remunerated engineers, and the question of quick transit, in one of its phases at least, will be solved with greater satisfaction to the public and credit to the engineering profession than the most ardent advocates of speedy passenger travel now dare hope for. The lighting of the tube by windows, which would constitute a most essential element of success, would not, as might at first appear, be a matter of much practical difficulty. Although brittle, glass is comparatively strong, and would resist many times the pressure required to be brought upon it in working the line. An example, apropos in this connection, of the ability of glass to resist pressure, was given some years since in steam-boiler experiments of the Franklin Institute, in which the plate-glass window of a boiler withstood the pressure until it rose suddenly to one hundred and eighty pounds to the square inch.

Allusion has already been made to the proposed supercession of the present Broadway tunnel of eight feet diameter by one thirty-one feet in width, eighteen in height, and furnished with double tracks. In the plans made public, no information is given as to the motive-power proposed, but it is manifest that cars running in opposite directions could not, unless the tunnel be longitudinally partitioned from end to end, be propelled by the fan-blast or exhaust used in the present experimental work. It is hardly likely that the folly of wire ropes will be repeated in this case, or that the slow power of horses will be used on a railway built at such cost. Locomotives may be attempted, but their employment, because of smoke, foul air, and jar to the foundations of buildings, should not be tolerated. The motive-power for such an underground line is not of less importance than the construction of the line itself, and the latter should, from the first, be calculated with especial reference to the former. Although the suggestion is not free from difficulties, there is good reason for the belief that the Clegg and Samuda system, a tube with a longitudinal valve-covered slot in the top, and an internal piston connected with the car running on an external track, would effectually subserve the purpose of transit through such a passage-way under the streets. During the existence of the line between Kingston and Dalkey, a gross load of fifty tons was

* Paper read before the New York Society of Practical Engineering, Jan. 3 1872.

at times propelled at a speed of fifty miles an hour, the gradient being one in one hundred and fifteen, the diameter of the main fifteen inches, the vacuum at the greatest equal to twenty-five inches of mercury, and the engine of one hundred horse-power. The leakage of the valve absorbed about ten horse-power per mile, or thirty horse-power per section of three miles. The cost of such a railway, laid on the surface, was about twenty-five thousand dollars per mile, at the prices of labor and material a quarter of a century or more ago. The loss of power by leakage through the valve appears to have amounted to from one-fourth to one-third of the whole. But this, while serious when in direct competition with locomotives, would be of minor consequence when the great patronage of a New York City railway waranted unusual outlay, and, as far as the ventilation at the tunnel is concerned, would prove a positive benefit to the line, though at the cost of fuel for the engine. It must be remembered, too, that the valves devised by Clegg and other projectors of his time were before the introduction of india-rubber, a substance better than any other adapted to such a purpose. There is apparently no good reason why a strip of caoutchouc so applied as to press laterally over the longitudinal opening in the tube, should not serve, in a much more efficient degree, all the functions of the complicated device of Clegg and Samuda's railway. Should it prove too slight in tensile strength, a wire rope could be imbedded within it, and should its yielding power be found insufficient, this essential could be increased by giving a cellular consistence to the material by methods already known. The deterioration which would occur from contact of oil or grease necessarily used for lubrication, would, in the use of india-rubber as just indicated, require that it have cemented upon it a covering of leather or the like.

While there can be no doubt that both an elevated and underground railway, properly constructed, will meet with the most extended and profitable patronage from the citizens of New York, there is no reason to suppose that the surface lines will ever be given up, and on them some motive-power other than horses or steam should be provided. Of the several systems of pneumatic propulsion, that which embraces tanks of compressed air, serving in lieu of steam in the driving of engine pistons, is the only one adapted to the purpose. A number of trials have been made during the past few years with alleged satisfactory results, but it is doubtful if the chief obstacles to its employment at all seasons of the year have been overcome. Among recent inventions designed to increase the utility of the system is one in which the tanks are to be made of paper, obviously to prevent as far as possible the loss of power by radiation of heat generated from the compression of air in the tanks ; another covers the use of a number of cylinders connected by tubes to form together the compressed air reservoir of the car, and which admits of a more convenient arrangement of, as well as greater strength in such reservoir. The inventor of this also claims the combination with the heating apparatus of the car of a conducting pipe from the reservoir in such a way that the compressed air, while passing to the engine, may be heated to increase its expansive power, while still another feature of his apparatus is a muffler or box lined with soft fibrous material, to receive the exhaust from the engine and deaden its sound.

The plan of making the reservoir of non-conducting material might possess a certain advantage if the air could be used as soon as compressed, or before time for any considerable radiation had been afforded. The arrangement of the air-holding cylinders in connection with each other would afford in some cases a source of convenience, but would not be essential to the arrangement of the cylinders with regard to economy of space, as the cylinders might, in succession, be brought in communication with the engines. The need of the muffler seems doubtful, and, as the air could hardly leave the cylinders quite reduced to atmospheric pressure, it would probably be much better to throw the exhaust into the car-heating furnace in winter to urge the blast, and in summer into the body of the car to cool the atmosphere therein. The heating of the compressed air to increase its power of expansion would be likely to be of advantage only when incidentally incurred in protecting the cylinders from the congelation of vapor contained in the air, and liable to be frozen by the absorption of heat in the expansion of the air in working the engine. To this end, it would be advisable to arrange the cylinders within annular jackets in open communication with the furnace used for warming the car, and which should be constructed with especial reference to this use in connection with the driving motor. This last should furthermore be so applied in connection with the brakes, that the throw of a lever would instantly turn the pneumatic power from the propulsion of the car to its stoppage, which, by this means, could probably be accomplished in less time and within a shorter space than could be done with horses at an equal speed. There is in addition to those just specified another point which is now beginning to attract the attention it deserves, viz., the regulation of the inflow of air to the cylinders. This has been accomplished, it is claimed, by very simple devices, and, indeed, the mechanism need not be complex, for the connection of the stem of a pressure-gauge with a valve governing the size of the cylinder inlet-ports would seem to fully embrace the principle of an efficient device for the purpose.

The elements enumerated as essential to the success of the system will necessitate the construction of a street car radically different from those now in use, especially in the matter of weight. But there should be no difficulty in reducing the weight of the car, so as not to exceed, with its engines and reservoir, nine thousand pounds, the weight of the clumsy vehicles that now traverse the tramways of New York.

In conclusion, such in brief are the ideas of the writer on the most important application yet suggested of so-called pneumatic power. As to how far they will ever reach fruition in the solution of the vexed question of city transit, it is impossible to say.

But they have been deduced, without reference to any especial plan or theory, from the actual results of recorded practice not less than from the well-known laws of science, and have led him to believe that passengers may be cheaply carried to and from the City Hall at from twenty to forty miles an hour with all the comfort of ordinary railways, and none of the dangers or inconveniences incident to the employment of locomotives.

The Calcasieu Sulphur Mine.

Mr. W. B. KOUNTZ delivered a lecture on the Louisiana sulphur deposits before the New Orleans Academy of Sciences, Dec. 11th, last. The document, as it is now before us, is quite lengthy, and goes over the whole ground, from the beginning of the enterprise to the present time, and finally the method decided upon for the extraction of the sulphur is described in a clear and concise manner. This portion of the lecture is of special interest. Although the proposed method is not new to engineers, it is nevertheless gratifying to hear that it is to be introduced into this country, we believe, for the first time.

The shaft will be composed of three parts :

1. A shaft dug in the usual manner, about 17 feet in diameter, octagonal in form, and lined with a crib-work of wood to the depth of 165 feet — in other words, through the clay to the stratum of movable sand below.

2. A shaft of iron cast in plates and fastened together with rivets, the whole circular in form and about 14 feet in diameter, descending inside the wooden-lined shaft, and designed to extend from the bottom of the wooden shaft through the stratum of sand to the rock, commencing at a depth of about 165 feet from the surface, and terminating at the rock—a distance of about 179 feet, or 344 feet from the surface of the ground.

The weight of this exterior iron shaft will be about 250 tons.

3. The *shaft proper*, or the shaft of extraction, consisting of an iron tube, commencing at the surface of the ground, and put down inside the wooden shaft, and continued through the iron shaft below it just described, constructed of cast iron sections, or rings, 10½ feet in diameter, each about 4½ feet high and from 1½ to 1¾ inches thick, with flanges 3 inches wide running around the top and bottom of each section, on the inside ; which sections or rings are fastened together with bolts through the flanges, and are successively screwed tightly together. Each ring or section has been turned in a lathe, and the flanges fittted so closely together that when bolted neither water nor gas can penetrate from the outside. The weight of this shaft is about 550 tons ; the two iron shafts containing about 800 tons of metal.

In April last the chief engineer of the company was despatched to Europe to order and superintend the construction of these iron shafts and accompanying machinery, and to procure the tools and appliances necessary to carry on the work. The materials, shaft and machinery were ordered from Europe for two reasons : 1. Because no shaft had ever been constructed in this country, and it was therefore more sure of final success as well as more economical to have it manufactured in workshops which already had the patterns and the machinery and skilled labor requisite for its construction. 2. Because the invention is patented in Europe (and more recently in this country) and the company could not use the process without the consent of the inventor. The chief engineer has succeeded in his mission. The shaft and machinery are on shipboard, and by a dispatch to the secretary of the company, sent a few days since per cable, the vessel will sail from the port of Calais this day (December 11) for the mouth of the Calcasieu.

Mr. GRANET returned in September, and immediately proceeded to the mines where, on the 15th November last, he commenced the shaft, to be lined with wood. There being no water nor gas in the stratum of clay to obstruct or intercept the work, it will progress without interruption, and be completed by the arrival of the iron shaft from Europe. Water, a dangerous and formidable enemy of the ordinary miner, is now needed by the engineer. If the shaft of wood be not already filled with water, the engineer wil pump it full. The first or outside iron pipe will then be put together at the mouth of the shaft, and fitted with a water-tight, movable bottom, as though it were a *tub*. It will then be lowered down inside the wooden shaft as fast as the plates are riveted together. A valve is placed in the bottom to let in the water, controlled by the engineer at the surface of the ground, so as to admit gradually sufficient water to cause it to sink. When lowered to the stratum of sand the bottom of the shaft will be removed, and the shaft will sink into the sand. In the artesian wells previously sunk upon the lands of the company, the bottom of the pipe usually preceeded, or sank below, the surface of the sand on the inside of the pipe, about six feet until it rested on the rock. The greater weight of the large iron shaft will probably cause it to sink much lower—say from forty to sixty feet below the surface of the sand, inside the shaft. The sand contained inside the shaft, as it descends, will be removed in precisely the same manner as in ordinary artesian wells. A large cylinder of iron, called a *sand pump*, of the diameter of the inside of the shaft, with a valve in the bottom, which opens to admit the sand as the cylinder descends, and closes as the cylinder rises, is alternately elevated and let fall again, until it is filled with sand, when it is conveyed to the mouth of the shaft and emptied. This operation is repeated, until the whole of the contents of the shaft are exhausted ; and as the shaft sinks readily in advance of this exhaustion, when the shaft be-

comes entirely empty the bottom will be resting on the rock. Should the shaft fail to sink from obstruction, outside pressure, or other cause, it is pressed down from above by means of appliances prepared for that purpose.

When this, which is intended to be an outside or protection shaft, has descended to the rock and been properly secured, the well will be filled with water again, if not already full, and the *shaft proper*, or shaft of extraction, will be put down. This shaft, consisting of 90 sections or rings before described, will be screwed together at the surface one after the other, and as fast as joined will be lowered inside the wooden shaft, as the outside iron shaft before. A movable bottom will be attached to this shaft also, with a valve to let in the water in sufficient quantity to sink it; and as the sections are attached the whole will descend gradually through the wooden shaft (165 feet), through the first iron shaft (179 feet further) to the rock—about 344 feet below the surface of the ground.

It then becomes necessary to change the tools with which the work is to progress. The sand pumps will now be removed as useless, and the perforation of the rock will commence by the use of a novel instrument called a *trepan*. This tool consists of an immense frame of iron—sometimes weighing from six to eight tons—of the same diameter with the inside of the shaft, armed at the bottom with enormous steel teeth, which, raised up and let fall again by the engine at the mouth of the shaft and made to revolve as the process is repeated, performs on a large scale the work of the ordinary hand-drill used in boring in quarries for blasting rocks. In Europe, where the rock encountered is very hard, this operation is tedious and slow. It is sometimes necessary first to bore a smaller hole, and afterwards, using the first as a guide, to bore a larger one around it. It may seem strange to American ideas, but the hardest of known rocks have been penetrated by this process, and iron shafts from six to ten feet in diameter have been put down through them. Mr. GRANET witnessed the operation at Marne, in northeast France, last summer, when the trepan, working continuously for fifteen days and nights, only progressed about one inch, and the progress was deemed satisfactory. But these hard strata, in Europe, are not generally very thick, and when once through them the operation of sinking the shaft proceeds again very rapidly.

But in Calcasieu we will meet with no such detention. The rock is a soft lime-stone—so soft, in fact, that Mr. MUNN, the artesian well-borer, calls it soapstone, and Mr. GARNET, chief engineer, hardly admits that it deserves the name of rock at all. However this may be, it is evident that the trepan will perforate this stratum without difficulty or delay, and the pipe will be forced down as the boring proceeds, until it enters the sulphur, 428 feet below the surface. After descending into the sulphur a few feet, the shaft will be secured from the influx of water from above, by a peculiar process. This contrivance is termed a moss-box, which is similar in its objects and application to the seed-bag of the borer of petroleum wells. It completely shuts off the ingress of water from strata around the shaft. By means of the moss, expanded laterally, when the cylindrical column of cast-iron tubing is allowed to rest upon it, a tight joint is formed between the rock at the bottom and the cast-iron tubing, effectually shutting out the water from all sides. There is no water in the sulphur bed below.

The advantages of this method of sinking shafts now become apparent. The sand stratum underlying the clay, and about 179 feet thick, is a water-bearing formation, and consists of movable sand, and is classified by well-borers as quicksand. It is permeated with gas and water, and it is extremely difficult, if not impracticable, to sink a permanent shaft through it by the old method. There were also found in the rock small seams or crevices, through which water and gas flow with some force; and shafting across these openings, in the ordinary way, could only be accomplished by the use of the most powerful steam pumps yet constructed, and an effective system of constant ventilation. By the adoption of the invention of Mr. CHAUDRON, all these difficulties are obviated or overcome. The water, instead of being an obstruction, is actually needed by the engineer, and whatever gases may be encountered, they will be met, not with suffocating effect, at the bottom of the shaft, but at the surface of the ground, where they will be dissipated in the open air, without danger, or even inconvenience to the workmen.

The entire space between the interior and exterior shafts will now be filled with concrete, or Beton, and allowed to harden. The design of this process is to strengthen the shaft against outside pressure; but more especially to protect the iron of the interior shaft from the action of acidulous waters, which may be found in the strata overlying the sulphur.

This accomplished the well or shaft will be pumped out, and the miner will, for the first time, descend through the iron shaft with his pick and his shovel, and entering the sulphur bed will lay out and construct his chambers and galleries, sending the mineral to the surface as he progresses underground.

Meeting of the Association of the Pig Iron Manufacturers of the United States.

PURSUANT to the following call, a meeting of gentlemen representing a large proportion of the pig iron manufacturers, was held at the Astor House.

"JANUARY 25, 1872.

"DEAR SIRS: A strong feeling having been manifested throughout the country in favor of the formation of an 'Association of the Pig Iron Manufacturers of the United States,' it has been decided to hold a meeting for that purpose at the Astor House, New York, on Wednesday, 7th February, 1872, at 11 o'clock, A. M,

"The necessity for such an Association has been rendered apparent by the want of proper statistics, the absence of all facilities for interchange of views, and the utter lack of concerted action in matters of general and vital importance.

"You are hereby respectfully invited to attend the meeting.

"DAVID THOMAS.....Hokendauqua, Pa.
G. A. WOOD, Pres't..Lehigh Crane Iron Co., Philadelphia, Pa.
GRAFF, BENNETT & CO.....Clinton Furnaces, Pittsburgh, Pa.
LAUGHLIN & CO.....Eliza Furnaces, Pittsburg, Pa.
SHOENBERGER, BLAIR & CO...Shoenberger Furnaces, Pittsburgh, Pa.
JAMES WESTERMAN..Westerman Iron Co. Sharon, Pa.
BROWN, BONNELL & CO....Mahoning Works, Youngstown, Ohio.
O. W. POTTER, Pres't.....Chicago R. M. Co., Chicago, Ill.
IRON MOUNTAIN CO.....St. Louis, Mo.
EDWARD BECH & CO....Poughkeepsie Iron Works, New York.
J. W. HOYSRADT, Agt....Hudson Iron Co., Hudson, New York.
H. BURDEN & SONS....Burden Iron Works, Troy, New York."

The meeting was organized with DAVID THOMAS, of Hokendauqua, as Chairman. A Committee of which Mr. ABRAM S. HEWITT was Chairman, drafted a Constitution and By-laws, and also reported the following names as officers of the permanent organization who were elected.

President.....DAVID THOMAS.

VICE-PRESIDENTS.

A. B. STONE.....Cleveland.
EDWARD COOPER.....New York.

TREASURER.

G. M. WHITTAKER.....Saucon Iron Works.

MANAGERS.

EDWARD H. TROTTER.....Pennsylvania.
W. F. BARTLETT.....Massachusetts.
O. W. POTTER.....Chicago.
D. E. GARRISON.....St. Louis.
JAS. J. BENNETT.....Pittsburgh.

The Constitution provides for the election of a Secretary by the Board of Managers, who shall not be an iron manufacturer.

The time was occupied for the most part in the discussion of details of organization.

The report of a committee of Lehigh furnace managers on the claims and merits of the "Player Hot Blast Patent," was fully coincided in by the gentlemen present.

A meeting of the Board of Managers will be held in the course of the current month, after which due notice will be given of the time and place of the next meeting.

The Hoosac Tunnel.

CONCERNING this work and the railroad which will pass through it, Governor Washburn speaks as follows in his recent message to the Massachusetts General Court:

"The Hoosac Tunnel enterprise has been prosecuted diligently during the past year, and the work is now progressing to reasonable satisfaction. Although up to this date the Messrs. Shanly have not made their full advance for which the contract with them stipulates, it is believed their facilities are such that they will be able to finish the tunnel by March, 1874, the limit of time specified in the contract for its completion. When they assumed management 9,341 feet had been opened; to the first of last month they had advanced the work by 7,737 feet, and there then remained 7,953 to complete the undertaking. But as they have completed the central shaft and are now working from four instead of two faces, we have every warrant for expecting much more rapid progress in the future than has been made hitherto. The net expenditure by the State for the tunnel and the Troy and Greenfield Railroad up to December 31, 1871, exclusive of the interest account, was $6,335,332.30. It is highly gratifying to those who from the first have been earnest advocates of this great enterprise to know that its ultimate and speedy completion is beyond doubt or dispute. It can no longer be looked upon as a financial blunder necessarily bringing large loss to the Commonwealth. It may to-day be conside[illegible] a grand success—whether viewed as a triumph o untiring energy and masterly engineering proficiency or as the opening of a great thoroughfare by the shortest route to the magnificent granary of the West and Northwest.

Newspaper.

FROM an editorial article in the *Boston Journal of Chemistry*, it appears that kaolin, white clay, or *terra alba*, which enters largely into the composition of cheap candy, is also in high favor with paper-makers. Nearly fifteen per cent. of the paper on which one of our largest technical periodicals in this city is printed is of this substance, but a London paper called *Science Gossip*, takes the lead, containing 21.59 per cent. The *Independent*, of this city, contains 8.71 per cent., the *Nation* 6.21, the *Tribune* 3.23, and the *Herald* 3.06 per cent. The *Boston Journal of Chemistry* contains only 0.46 per cent. of ash, mostly silica, which was contained in the fibre of which the paper was made, and no clay. We ourselves don't object to a little clay, and we have no doubt that we get it.

Brown Tint for Iron and Steel.

DISSOLVE in four parts of water, two parts of crystallized chloride of iron, two parts of chloride of antimony and one part of gallic acid, and apply the solution with a sponge or cloth to the article, and dry it in the air. Repeat this any number of times according to the depth of color which it is desired to produce. Wash with water, and dry and finally rub the articles over with boiled linseed oil. The metal thus receives a brown tint and resists moisture. The chloride of antimony should be as little acid as possible.

THE COAL TRADE.

Anthracite Coals.

NEW YORK, Feb. 9th, 1872.

WHOLESALE. Scarcely a ripple has occurred to disturb the dull placidity of the Coal Trade, during the past week. Shortly after the February prices were fixed by the Lehigh Coal Exchange some apprehension was felt that the miners in that region, who work on the basis system, would refuse to stay in. Since that time, however, they have, we are informed, held a meeting and decided to continue work when coal only brings four dollars and a quarter per ton in New York. It was supposed that they would not be willing to accept the same percentage if coal went below four and a half dollars per ton, but they have probably had the good sense to see that the operators, in the Lehigh region at least, are not responsible for the low prices. They must lose somewhere in the neighborhood of thirty cents per ton on the coal they mine and send to market, and as the large companies are not miners in that region, any possible combination to depress prices would scarcely have a favorable reception by the operators.

We are informed by dealers that more coal has been sold during the past week, than during any other week for a month or more. Prices are so low that no one who wants coal is afraid to buy.

As will be seen by reference to our tables, a decline in the amount of coal sent forward, in comparison with last week, is quite noticeable.

It would be folly to attempt to make any predictions regarding the future. The same combination of causes which has brought coal down to the present prices may bring it lower. No immediate advance seems to be expected. Low prices being more advantageous, or at least less disastrous, to the large companies than to small operators, those powerful corporations are not so very anxious to advance prices, particularly since the loss which they sustain as miners is paid by their profit as transportation companies. Their best policy is undoubtedly always to keep prices at a moderate figure, and they are not at all troubled at the present prices.

FREIGHTS. Vessels continue scarce, with a slight decline in prices. This is, however, so slight that we have not changed our quotations.

Anthracite Coal Trade for 1871 and 1872.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending Feb. 3, 1872, compared with the week ending Feb. 4, 1871.

COMPANIES.	1871. WEEK.	1871. TOTAL.	1872. WEEK.	1872. TOTAL.
*Phila & Reading R.R†	8,782	527,461	31,765	465,279
Schuylkill Canal	....	....	....	....
*Lehigh Valley R. R.	1,193	333,565	32,157	468,360
Lehigh & Sus. R. R.	616	55,056	21,878	121,660
Lehigh Canal	....	....	....	....
Scranton North	2,662	3,521	10,878	61,855
" South	58	137	26,654	190,928
Penn. Coal Co., rail	272	270	19,599	89,667
" " " canal	....	....	....	....
Del. & Hud. Canal Co.	....	....	....	....
" East	12,968	56,967	6,044	55,103
" West	677	10,323	5,965	34,350
" South	4,376	18,113	6,535	35,239
Shamokin	4,185	29,184	1,334	23,375
Trevorton	....	....	....	....
Lykens Valley Coal Co.	1,179	7,886	....	62
Wyoming South	....	....	....	....
Wyoming North	....	....	....	....
P. N. Y. C. & R. R. Co.	....	32,182	....	....
Williamstown Co'y	....	17 847	....	....
Big Lick Col	1,997	8,879	....	2,617
Total	33,325	1,096,397	162,488	1,548,502
1870	....	....	39,325	1,096,397
Decrease				
Increase			123,163	452,105

* These figures are for the week and fiscal period commencing Nov. 30.

† Less coal transported for Co's use and Bituminous coal.

Bituminous Coal Trade, 1871 and 1872.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Feb. 3, 1872, compared with week ending Feb. 4, 1871.

COMPANIES.	1871. Week.	1871. Year.	1872. Week.	1872. Year.
C. & O. Canal	....	....	....	....
B. & O. R. R.	8,763	54,377	17 193	85,617
H. & B. T. R. R.	4,559	20,125	3,997	27,100
*Harrisburg & D.	6,412	38,437	5,939	100,189
*L. V. R. R.	....	2,639	....	23,110
P. & N.Y.C. & R. Co.	....	30,084	....	....
Cumberl'd Brauch Canal	....	....	....	....
" Railroad	....	....	....	....
Total	19,734	145,662	27,135	235,907
			19,734	145,662
Decrease				
Increase			7,401	90,245

The tonnage of the P. & N. Y. C. & R. R. Co. is included in that of the L. V. R..R. Co.

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Susq. Div.)

Week ending Feb. 3—Compared with same time last year.

WHERE SHIPPED FROM	WEEK 1872., tons ct.	WEEK 1871. tons ct.	YEAR 1872 tons cwt.	YEAR 1871. tons. cwt.
Wyoming Region	23698 11	312 06	109174 01	38118 11
Upper Lehigh Region	3657 14		15773 02	4614 06
Beaver Meadow Region				
Hazleton Region	218 18		1107 14	704 05
Mahanoy Region				
Treskow Region			5309 03	1043 03
Mauch Chunk Region	197 01	408 08	17254 09	14773 08
Totals	27682 04	750 14	148618 09	59253 13
Increase	26931 10		89364 16	
Decrease				
DISTRIBUTION.				
Forwarded East of Mch Chunk by Rail	21878 10	615 16	121660 07	55055 17
Forwarded East of Mch Chunk by Canal.				
Delivered at and above Mauch Chunk	1245 11	14 17	6811 12	3423 14
L. V. R. R at Packer'n	44 06	120 01	1278 12	774 02
Delivered to L. & B. R. R. at Plymouth Bridge	4513 19		18,867 18	
Totals				
Of the above there was transported on acc'nt of L. C. & N. Co.	271 07	408 08	21573 03	16099 15
W.-B. C. & I. Co.	18131 00	222 00	78919 05	30790 03
Totals	18402 07	630 08	100492 08	46799 18
Increase	17771 19		53692 10	
Decrease				

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, February 3, 1872.

BY RAILROAD.—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons. Cwt.
From St. Clair	
" Port Carbon	2,651 17
" Pottsville	78 09
" Schuylkill Haven	14,733 10
" Pine Grove	947 18
" Tamaqua	5,300 16
" Harrisburg	
" Dauphin	328 10
Total	24,041 00

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	
" Mill Creek "	.....
" Schuylkill Valley Scales	
" Mt. Carbon "	
" Cressona "	
" Pine Grove "	
" Tamaqua "	.....
Total	

SHIPPED WESTWARD VIA NORTHERN CENTRAL RAILROAD.

Passing Locust Gap	162 01
" Shamokin	3,130 07
" Herndon	.....
Total	3,292 08

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R.	502 00
" Lebanon & Pine Grove Branch	323 18
Total	825 18

CONSUMED ON LATERALS.

From Frackville Scales	
" Mill Creek "	523 12
" Schuylkill Valley Scales	627 14
" Mt. Carbon "	649 04
" Cressona "	254 07
" Pine Grove "	300 11
" Tamaqua "	507 03
Total	2,862 11

LEHIGH AND WYOMING COAL.

Received via Allentown, E. Penn'a Br.	37 12
" " Alburtis, " "	6 03
" " Oreland, G. & N. Br.	604 03
" " Connecting R. R.	.....
" " Willow Street R. R.	95 10
Total	743 08

BITUMINOUS.

From Harrisburg	5,787 03
" Connecting R. R., G. & N. Br.	
" Junction R. R.	151 19
Total	5,939 02

COAL FOR COMPANY'S USE.

Anthracite	2,347 17
Bituminous	244 06
Total	2,592 03

RECAPITULATION

	Total for Week.	Corres-p'g week last year.	Increase and Decrease.
Passing over Main Line and Leb. Val. Branch	24,041 00	5,573 17	i 18,467 03
For Shipment by Canal			
Shipped Westward via Northern Central R. R.	3,292 08	1,380 11	i 1,911 17
Shipped West or South from Pine Grove	825 18	577 09	i 248 09
Consumed on Laterals	2,862 11	1,101 09	i 1,761 02
Lehigh and Wyoming Coal	743 08	146 13	i 594 15
Total Anthracite paying freig't	31,765 05	8,781 19	i 22,983 06
Bituminous	5,939 02	6,411 15	d 472 13
Total of all kinds paying freiz't	37,704 07	15,193 14	i 22,510 13
Coal for Company's use	2,592 03	2,548 04	i 43 19
Total Tonnage for Week	40,296 10	17,741 18	i 22,554 12
Previously this year	566,944 18	581,623 15	d 14,678 17
Total to date	607,241 08	599,365 13	i 7,875 15
SHIPPED BY CANAL.			
From Schuylkill Haven			
" Port Clinton			
Total Tonnage per Week			
Previously this year			
Total to date	13,355 16	36,225 17	d 22,870 01

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Feb. 3, 1872, with totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL Tons. Cwt.
Total Wyoming	10,775 14	106,334 00
" Hazleton	22,346 19	282,540 01
" Upper Lehigh	43 15	616 16
" Beaver Meadow	6,517 14	117,971 10
" Mahanoy	2,437 15	40,562 12
" Mauch Chunk	5 17	495 08
" Sullivan & Erie	1,169 12	8,716 08
Total Anthracite	43,277 06	556,336 15
Bituminous Coal via P. & N. Y. R. R.		23,109 18
Bituminous Coal from all sources		883 00
Total by rail and canal	43,277 06	580,329 13
Same time last year	2,012 03	392,771 08
Increase	41,265 03	187,558 05
Decrease		
Forwarded East from Mauch Chunk by rail	32,137 04	468,360 03
Same time last year	1,593 07	333,565 09
Increase	60,543 17	134,794 14
Decrease		

RECAPITULATION.

Forwarded East from Mauch Chunk by rail	32,137 04	468,360 03
Forwarded North from L. & B. Junction	9,159 07	63,051 17
To N. C. R. R., at Mount Carmel		73 06
To L. & S. R. R. at Packerton for rail	138 08	2,038 09
Delivered at M'h Chunk	65 04	456 06
Delivered on line of road above Mauch Chunk	1,023 17	6,269 05
Delivered above Mauch Chunk for use of L. V. R.R.	753 06	11,496 04
To L. & S. R. R., at Penn Hav., for railroad		3,638 11
Do. for canal		864 07
At M. Chunk for canal		99 07
Total Anthracite	43,277 06	556 336 15
Bituminous Coal		23,992 18
Total all kinds	43,277 06	580,329 13

This report includes all Bituminous Coal carried over the Lehigh Valley and P. & N. Y. Railroads from December 1st 1870 to date.

Lehigh Coal and Navigation Company,

Report of Coal transported over the Lehigh Canal and L. & S. Div. of Central Railroad of New Jersey for the week ending Feb. 3, 1872, and for the year 1872.

	WEEK.	YEAR.
Forwarded East of Mauch Chunk by Rail	21,878	121,660
Delivered at and above do.,	1,245	6,811
Forwarded East of do., by Canal	....	
	23,124	128,471
Corresponding period last year—		
Forwarded East of Mauch Chunk by Rail	615	55,055
Delivered at and above do.,	14	3,423
Forwarded East of do., by Canal	....	
	630	58,479
Increase on Railroad	22,493	69,992
Decrease " "		
Increase on Canal		
Decrease " "		
Of the above there was transported on account of—		
Lehigh Coal Nav. Co	271	21,573
Wilkesbarre Coal & Iron Co	18,131	78,919
	18,402	100,492
Corresponding period last year—		
Lehigh Coal Nav. Co	408	16,009
Wilkesbarre Coal & Iron Co	222	30,790
	630	46,799
Increase	17,771	53,692
Decrease		

Huntington and Broad Top R. R. Co.

For week ending Feb. 3, 1872	3,997	tons.
Same time last year	4,559	"
Increase		"
Decrease	562	
Total amount shipped to date	27,100	"
Same time last year	20,125	"
Increase	6,975	"
Decrease		

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna and Western R. R., for week ending Feb. 3, 1872 :

	Week. Tons. Cwt.	Year. Tons. Cwt.
Shipped North	10,578 03	61,854 14
Shipped South	26,653 03	190,929 03
Total	37,231 06	252,783 17
For the corresponding time last year:		
Shipped North	2,661 13	3 520 06
Shipped South	58 05	137 06
Total	2,719 18	3 657 12
Increase	34,511 08	259,126 05
Decrease	.....	.....

Shamokin Coal Trade.

For week ending February 3, 1872	1,333 1
Same time last year	4,185 08
Increase	
Decrease	2,851
Total amount shipped to date	23,275 04
Same time last year	29,191 0
Increase	
Decrease	5,915 19

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending Feb. 3, 1872.

	1872. WEEK.	1872. YEAR.	1871. WEEK.	1871. YEAR.
By Railway	19,598 16	89,667 01	232 03	2,691 09
" Canal				
Total	19,598 16	89,667 01	232 03	2,691 09
Increase 1872	86,975 12			

Delaware and Hudson Canal Company.

The following is a statement of Coal Transported by the Delaware and Hudson Canal Co. for the week ending Feb. 3, 1872.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,		
By Railroad, East	6,044	55,109
" " West	5,965	34,350
" " South	6,535	35,239
Total Tons	18,544	124,698

For the same period last year.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,		
By Railroad, East,	12,968	56,967
" " West	677	10,323
" " South	4,376	13,113
Total Tons	18 021	80,403
Increase	44,295	

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Jan. 27, 1872.

	WEEK.	SEASON.
North	49,352 09	180,074 06
South	7,693 04	28,703 18
Total 1872	57,045 13	208,778 04
Corresponding time in 1871:		
North	Suspension.	
South	"	
Total		
Increase North		
Decrease North		
Increase South		
Decrease South		
Total decrease 1872		
Total increase 1872	57,045 13	208,778 04

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Feb. 3, and during the year 1872, compared with the corresponding period of 1871.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To R.&O.R.R. Co Tons Cwt.	Total. Tons. Cwt.
1872	.....	17,199 05	17,199 05
1871	.....	8,762 13	8,762 13
Increase		8,436 12	8,436 12
Decrease			

YEAR.

1872	.....	85,617 05	85,617 05
1871	.....	54,376 13	54,376 13
Increase	.....	31,240 12	31,240 12
Decrease			

Production of Coal in Northern Pennsylvania,

in the Blossburg, McIntyre (Ralson) and Towando Regions.

	Tons 1871.	Tons 1870.	Increase
Blossburg	815,079	733,035	82,044
McIntyre	106,130	17,808	88,322
Towanda	378,335	273,335	105,000
Total	1,299,544	1,024,178	275,366

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK. Feb. 9. R. A.	W. A.	AT PHILADELPHIA Feb. 9. R. A.	W. A.
SCHUYLKILL.				
Lump	$— —	$— —	— —	— —
Steamer	— —	— —	— —	— —
Broken	— —	— —	— —	— —
Egg	— —	— —	— —	— —
Stove	— —	— —	— —	— —
Chestnut	— —	— —	— —	— —
Pea	— —	— —	— —	— —
LEHIGH.				
Lump, (along side)	5 00	—	— —	— —
Broken	4 75	— —	— —	— —
Egg	4 50	— —	— —	— —
Stove	5 25	— —	— —	— —
Chestnut	4 25	— —	— —	— —
Pea	— —	— —	— —	— —
SPECIAL COALS.*				
Honey Brook, Le'h W.A.	4 50@5 25		— —	— —
Spring Mountain " "	— —@— —		— —	— —
Sugar Creek " "	— —@— —		— —	— —
Sugar Loaf " "	— —@— —		— —	— —
Old Comp'y's. " "	4 25@5 25		— —	— —
Cross Creek " "	— —@— —		— —	— —
Room Run " "	4 25@5 25		— —	— —
Girardville " "		— —	— —	— —
McMichael " "		— —	— —	— —
Shamokin " "		— —	— —	— —
Lykens Valley " "		6 00	— —	— —
Broad Top " "		— —	— —	— —
Hill & Harris " "		— —	— —	— —
Henry Clay " "		— —	— —	— —
Powelton "		— —	— —	— —

Dealers in these coals may be found in our advertising columns.

Company Coals.

Feb. 1872.

	L.	Str.	Gra.	Eg.	Sto	Chest
*Scranton at E. Port	3 39	3 77	3 63	4 02	4 10	3 34
*Pittston at Weehawken	4 00	4 00	4 15	4 25	4 50	4 00
*Lackawana at Weehawken	4 00	—	4 15	4 25	4 50	4 00
Wilk'b're at Hoboken	3 75	3 75	3 85	3 85	4 25	3 75
Old Co. Lehigh at PtJohn's	4 75	—	4 00	4 00	4 50	4 00
Lehigh at Eliz. Port	4 75	—	4 00	4 00	4 50	4 00

For freights to different points see "Freights.

* To contractors.

Prices of Gas Coals.

Feb, 1872.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N.Y. Duty, $1 25, gold

	Coarse	Slack.
Block House	$1 75 @-1 75	
Gowrie	1 75 @-1 75	

Corrected by Bird, Perkins & Job, 86 South street.

	Coarse.	Culm of Coal
Pictou	$2 25	@1 25
Sydney	2 25	@- 80
Lingan	1 60	@- 80
Little Glace Bay	1 60	@1 00
Caledonia	1 60	@- 80

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty $1 25 per ton, gold, on the coarse coal. 25 per cent. ad valorem on the Culm of Coal

AMERICAN.

	Currency.
Westmoreland	$7 00 @- —
Fairmount Gas Coal Co. of N. Y.	7 00 @- —
Despard Coal Co.	7 00 @- —
Penn	7 00 @- —
Newburg Orrel Gas	— @- —
West Fairmount Gas Coal	7 00 @- —

AT PHILADELPHIA.

Powelton	$6 75

TO NEW YORK.

Provincial	
Sidney	$3 25
Lingan	3 25
Cow Bay	37½
Port Caledonia	3 37½
Little Glace Bay	3 25

Prices of Foreign Coals.

4 Feb, 1872.

Duty $1 25 per ton.

Corrected weekly by PARMELE BROS., No 32 Pine street, N. Y.

Liverpool Gas Caking	$ 8 00@— —
" " Cannel	12 00@13 00
" House "	18 00@20 00
" Orrel	14 00@16 00

Per ton 2,240 lbs., ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$16 00@17 50
"Cannel, "	18 00@20 00

Per ton 2,000 lbs. delivered.

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven for consumption	$1 25
For reshipment	

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 72
C. R. R., N. J., Phillipsburgh to Elizabethport	1 06
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$2 13

MAUCH CHUNK TO PORT JOHNSON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 27
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	1 06
Shipping expenses	25
Wharfage	10
Total	$2 13

TO HOBOKEN.

L. V. R. R., Mauch Chunk to Phillipsburgh	72
Morris & Essex R. R. Phillipsburgh to Hoboken	1 06
Shipping expenses	25
Wharfage	10
Total	$2 13

TO SOUTH AMBOY.

L. V. R. R.	72
R. & D. R. R. / Cam. & Am. R. R.	91
Shipping Expenses	35
Total	$1 08

PENN HAVEN TO ELIZABETHPORT.

L. V. R R. Penn Haven to Phillipsburgh	88
C. RR. of N. J. Phillipsburgh to Elizabethport	1 06
Shipping expenses	25
Wharfage	10
Total	$ 2 29

Freights.—Feb. 1872.

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore.	Anthracite. From Philada'a.	Anthracite. From Elis. Port, Port Johnston, and Hoboken.	Anthracite. From Newburg.	Anthracite. From Rondout.
Amesbury						
Bangor						
Bath						
Boston	4 25	4 10		3 00		
Bridgeport	3 50	3 50				
Bristol						
Cambridgeport						
Derby						
Dighton		3 75				
East Cambridge						
Fall River	3 50	3 50				
Hackensack						
Hartford						
Jersey City	2 50			55		
Middletown						
Mystic						
New Bedford		3 75				
Newburyport		4 25				
New Haven	3 50	3 60		1 05		
New London		3 50	3 50	1 35		
Newport				1 40		
New York	2 60	2 50		55		
Norwalk				1 05		
Norwich						
Pawtucket						
Portland		4 25		2 50		
Portsmouth, N.H						
Providence		3 50		1 75		
Rockport						
Saco						
Sag Harbor						
Salem		4 25		1 20		
Stamford						
Stonington				1 10		
Taunton				1 25		
Warren						
Washington						
TO RIVER PORTS.						
Albany						
Catskill						
Cockxackie						
Coeyman's						
Cold Spring						
Fishkill						
Haverstraw						
Hudson						
New York						
Nyack						
Poughkeepsie						
Rhinebeck						
Rondout						
Saugerties						
Sing Sing						
Stuyvesant						
Tarrytown						
Troy						
West Point						
Yonkers						

MARKET REVIEW.

FOR THE WEEK ENDING FEBRUARY 10, 1872.

IRON.—The inquiry for Scotch Pig continues light, but the stock is moderate, and as the advices from abroad still quote advancing markets, prices here are fully maintained; we quote nominally in the absence of sales, Eglinton $38, Langloan $39, Glengarnock $40, and Coltness $42. The market for American continues active and excited, and prices have again been advanced, closing at $41a$42 for No. 1, $39a$40 for No. 2, and $38a$39 for Forge; sales have been made of 1000 tons No. 1 Thomas at $40; 1000 do. No. 1 Allentown, and 500 do. No. 2 Glendon, all season delivery, on private terms. There continues an active inquiry for Wrought Scrap, and prices are steady at the recent advance; 100 tons, on the spot, sold at $42 50; and 1000 do., to arrive, on private terms. New Rails have been rather quiet, but are firm at $63a $65, gold, for English, and $71a$73, currency, for American, at the works in Pennsylvania. Refined Bar from store continues very firm at our quotations, and from the circumstances of the case, must remain so for a considerable time to come. Rowland & Sons Anvil brand has advanced to 3 9-10 cents as the base price, in Philadelphia, and in Pittsburgh the quotation is 4 cents, Pittsburgh classification. Swedes Bar is very scarce, and firm. We note a sale of American R. G. Sheet, within our range. Russia Sheet is quiet and nominal.

Import of Iron into New York, from January 1, to January 31, 1872.

From Foreign ports.	ts. 1,308	ts. 8,877	bdls.	23,222
Coastwise	....	....		....
Total	ts. 1,308	ts. 8,877	bdls.	23,222
Same time 1871	2,261	4,843		26,645

WEEKLY REVIEW OF THE IRON MARKET.

The Pittsburgh *Commercial* of the 3d inst. says: "The metal market has been active, and prices have advanced $1 per ton on bituminous coal-smelted Irons. No change in prices of Anthracite Pig—the receipts have been fully equal to the demand. Foundry scarce and wanted. On Friday the Iron manufacturers met and advanced the rates of iron 2-10 per pound all round, and nails 25 cents per keg. We report the following transactions: bituminous coal smelted from Lake Superior ores—1700 tons No. 1 mill, to arrive, at $41; 200 tons close gray neutral, $40; 400 tons gray forge, to arrive, $41; and 200 tons mottled and white, $38 50, 4 months. Eastern Anthracite—300 tons mottled and white at furnace, $33; 270 tons Chiclies Forge at furnace, $35, cash; 200 tons close gray from yard, $39; 200 tons white and mottled, $39; 200 tons white, $38: 100 tons No. 3 Gray Forge, $4, four months; and 50 tons No. 1 foundry, $41, cash. Eastern Coke—1200 tons Eastern Coke, to arrive, $10, 4 months; Youghigheny Coke 300 tons Dunbar gray forge, to arrive, $41; 70 tons Dunbar white, $3; and 300 tons close gray Fairchance, $39, 4 months. Pittsburgh Coke—1000 Lucy furnace, June delivery, $40, 4 months."

The following is from the weekly review of Edward Samuel:—

PHILADELPHIA, February 5.—In pig iron a still further advance has taken place. The steady advance that many buyers have considered unwarranted, has been and is caused by good reasons, apart from the active demand both here and abroad; both local and English markets are entirely destitute of any stocks. Our production here being, it seems, less than last year, and in England the disorganization and advanced rates of both coal and iron labor has changed prices, and limited the supply to such an extent that exportation cannot be made here profitably. Old rails and scrap both present the same tendency as pig iron, the former being extremely scarce, and the foreign markets excited and advancing. In the latter there is but little for sale, even at advanced figures. Manufactured irons are firm and generally in active demand.

COPPER.—The manufacturers of copper and yellow metal are steady at our quoted rates. Ingot has moved more freely, the business being chiefly speculative again, manufacturers buying very sparingly; the sales are 500,000 pounds Lake at 28¼a28⅜ cents, cash and for the 15th inst., and 28¼a28¾ for March delivery; 500,000 pounds sold for 15th April delivery at 29; at the close the asking price for cash lots was 28¼a23½ cents.

LEAD.—There is a little more movement in foreign, but the demand is still limited; prices are without quotable change—we quote, ordinary foreign $5·95a$6 gold; 250 tons Spanish sold on private terms. Bar is steady at 9½ cents, Sheet and Pipe 10, and Tin-lined pipe 15, usual discount to th

Import of Lead into New York, from January 1, to January 31, 1872.

From foreign ports	pigs 31,426
Coastwise ports	8,034
Total	pigs 39,460
Same time 1871	56,691

STEEL.—We have as yet no change to note in store prices—the demand is fair, and stock pretty good. A sawmaker (Boynton's Lightning) has lately taken 5000 plates, 8 feet and under, as before reported, including all W. Jessup & Son's stock in store, wth large orders for importation.

SPELTER.—Foreign is steady at the prices previously current; 75 tons Silesian, prime brands, sold at 7¼ cents gold.

Import of Spelter into New York, January 1, to January 31, 1872.

Platee.....42,687 | 1871.....plates 41,004

TIN.—Pig remains very quiet, and we have only to notice the sale of 150 pigs straits on private terms: we continue our former quotations, but in the present temper of the market they are still nominal at 36¼a36½ cents for Straits and English, and 41 for Banca, gold. There has been a fair business in plates, but there seems to be less eagerness to purchase at the rates now current, though prices must be still called firm; sales have been made of 1800 bxs, assorted charcoal at $10 12½a10 25 for I. C.; 700 do., ½d X., $10 25a10 37½ for I. C.; 500 do. Charcoal Terne, $9; 300 do., $9 25; 1000 do. for forward delivery, $9 12½; 400 do., I. C. Coke, 10 by 14, $9 25; 500 do., 14 by 20, $9 25; 300 do Coke Terne, $8 37½a $8 50, all gold, and 500 do. S. T. P. charcoal terne, on private terms.

Import of Tin into New York, from January 1, to January 31st—

	1872	1871.
Pigs	No. 5,099	6,016
Plates	bxs 63,050	36,265

ZINC.—Sheet continues very steady and firm at our quotations, viz, Am. Dry 7a7½, French 10¼a11, Metallic 11½a12, Oxide Manganese 4½a5.

The following is the Metal Circular of Messrs. Vivian Younger & Bond dated London, Jan. 19th, 1872.

Prices of some of our articles have fluctuated rather much during the past week, and though a considerable firmness is still the leading feature amongst the generality of holders, yet there is not as much steadiness in rates as has been the case during the last few months. In fact it appears the existing high prices are interfering with legitimate trade, and there are some signs that speculation is being somewhat curtailed.

Copper—Values early in the week suffered a fall of from 50s. to 60s. per ton, and the market appeared weak, and likely to drop back considerably; some free buying on speculation, however, set in at £85 per ton for Chili Bars. and at the close the article has righted itself somewhat, and prices for that description are firm at about £85 cash, and £88 three months' prompt, with a rising tendency. Wallaroo also has recovered its position in a great measure, for after being done at £95, three months, it has found buyers at £97 per ton. English Raw and Manufactured, however, have not participated in this firmness, second hand Tough after being freely sold at £90, and Sheets at £96, are still offered at 20s. higher. In Furnace Stuff we have not heard of any transactions. The volume of business done has not been very large.

Tin—Has been dull and drooping in price. In Straits some forced sales for immediate cash have taken place at 141s., and other speculative transactions for forward prompts are reported on the basis of this rate. An extensive business in arrival Tin, with ship's name being given, is reported at from 142s. to 144s.. Much of the business reported could not be traced, and importers as a rule being convinced that the rumored large shipments have not taken place, and seeing the high price abroad, decline selling even at 143s.a141s., the prices at which they could have sold largely had they been disposed. Banca has remained steady at 143s. English is dull of sale.

Tin Plates—Continue in good demand, but owing to the large orders already booked, and the position of iron, makers still decline to meet buyers except at full prices, and even then very sparingly.

Iron—Considerable orders are still offering, and further advances are confidently looked for. The trade being very much retarded through the disputes with the men in both Coal and Iron trades, the manufacturers are very much disinclined to sell.

Spelter—Is very quiet, but there is a firmer tendency manifest at the close.

Lead—This article is in fair request, but consequent on desire of some of the purchasers before late rise to resell at a profit rather than ship, prices are scarcely so firm.

METALS.

NEW YORK, Feb. 10, 1872.

IRON.—Duty: Bars, 1 to 1¼ cents ℔ lb; Railroad, 70 cents ℔ 100 lbs.; Boiler and Plate, 1¼ cents ℔ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ℔ lb; Pig, $7 ℔ ton; Polished Sheet, 3 cts. ℔ lb; Galvanized 2¾; Scrap Cast, $6; Scrap Wrought, $8 per ton.

	Store Prices.
Pig, Scotch No. 1, ℔ ton	37 00@42 00
Pig, American, No. 1	41 00@42 00
Pig, American, No. 2	39 00@40 00
Pig, American, Forge	38 00@39 00
Bar Refined, English and American	— —@86 00
Bar Swedes, assorted sizes (gold)	85 00@100 00
	Store Prices, Cash.
Bar, Swedes	112 50@122 50
Bar, Refined, ¾ to 2 in. rd. & sq. 1 to 6 in. x ¾ to 1 in.	95 —@— —
Bar, Refined, 1¼ to 6 by ¼ & 5:16 & 2½ to 2¾ rnd. sq.	100 —@— —
Bar, Refined, 1 & 1½ by ¼ & 5:16	102 50@— —
Scroll	112 50@142 50
Ovals and half-round	110 00@130 00
Band	— —@107 50
Horse Shoe	107 50@117 50
Rods, ¼ to 3-16 inch	100 00@135 00
Hoop	115 00@162 50
Nail rod	7¼@— —
Sheet, Russia, as to assortment (gold)	15@— —
Sheet, Single, D. and T. Common	—5½@— 6
Sheet, D. and T. Charcoal	—6 @— 6½
Sheet, Galv'd, Nos. 10 to 27	10@13c lb.
" " Nos. 28, and 29.	15@19c lb.
Rails, English (gold), ℔ ton	63 00 @65 00
Rails, American, at Works in Pa.	71 00 @73 00

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ℔ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ℔ lb	— @— 34
Copper Bolts	— @— 36
Copper Braziers, 16oz. and over	— @— 36
Copper Nails	— @— 40
Copper, Old Sheathing, &c. mixed lots	25½@— 26
Copper, Old, for chemical purposes, 14@16 oz.	— @— —
Copper, American Ingot	28¼@— 28¾
Yellow Metal, New Sheathing & Bronze	— @— 26
Yellow Metal Bolts	26 @— —
Yellow Metal Nails	— @— 26

LEAD.—Duty: Pig, $2 ℔ 100 lbs.; old Lead, 1½ cents ℔ lb: Pipe and Sheet, 2¾ cents ℔ lb.

Galena, ℔ 100 lbs	$— @— —
Spanish (gold)	5 95 @6 00
German, do.	5 95 @6 00
English do.	5 95 @6 25
Bar (net)	9 25 @— —
Pipe (net)	— — @10 00
Sheet	— — @10 00

Colwell, Shaw & Willard Tin-Lined Lead Pipe 15 cts. ℔ lb.

STEEL.—Duty: Bars and ingots, valued at 7 cents ℔ lb or under, 2¼ cents; over 7 cents and not above 11, 3 cents ℔ lb; over 11 cents, 3½ cents ℔ lb, and 10 ℔ cent ad val. (Store prices.

English Cast (2d and 1st quality) ℔ lb	— 15 @— 18
English Spring (2d and 1st quality)	— 7 @— 10
English Blister (2d and 1st quality)	— 10 @— 17
English Machinery	— 11 @— 13
English German (2d and 1st quality)	— 10½@— 12
American Blister "Black Diamond"	— — @— 12
American, Cast, Tool do.	— 15 @— 16
American, Spring, do.	— 9 @— 11
American Machinery do.	— 9 @— 10
American German, do.	— 9 @— 11

TIN.—Duty: Pig, Bars, and Blocks, 15 ℔ cent. ad val.; Plate and Sheets and Terne Plates, 25 ℔ cent.; Roofing 25. ad val.

	Gold ℔ lb.
Banca	—@41
Straits	36¼@36¾
English	36½@36¾

PLATES.

Fair to Good Brands.	*Gold.*	*Currency.*
I. C. Charcoal, ℔ box	$10 12½@10 50	$11 00 @11 50
I. C. Coke	9 12½@ 9 50	10 25 @10 75
Coke Terne	7 87½@ 8 50	9 00 @ 9 50
Charcoal Terne	9 00 @ 9 50	10 00 @10 50

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign (gold) p. 100 lb.	7 00 @ 7 25
Plates, Domestic p. lb.	— 7 @— 11

ZINC.—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c per lb

Sheet per lb.	— 10½@—11½

San Francisco Stock Market.

BY TELEGRAPH.

Our report from the San Francisco Stock Market is dated the 6th inst. The market has again advanced, the quotations of Washoe and Comstock stock being higher than was ever known before. A dispatch from California dated the 3d inst., describes the excitement in the Washoe mining stock market as intense, the Savage mine having advanced $100 per share within twelve hours; the adjacent mines in sympathy, have proportionately advanced. The session of the Board was protracted beyond the usual limit, and the dealings were very large and animated. By advices per Associated Press, we are enabled to give the prices of a few prominent stocks one day later than per our regular report. It will be observed, that excepting an unchanged condition in Imperial, the advance is again general and uninterrupted as compared with the list of the 6th. Hale and Norcross is selling in the Board at $210 and thereabouts.

	Feb. 6.	Feb. 7.
Savage	190	275
Yellow Jacket	81	—
Kentuck	250	275
Chollar Potosi	69	75
Gould & Curry	160	—
Belcher	630	680
Crown Point	765	—
Ophir	—	79
Alpha	—	—
Imperial	105	105
Eureka G. V.	19	—
Meadow Valley	—	—
Amador	—	—

GOLD AND PETROLEUM STOCKS.

The crowded state of our columns compels us to omit the report of the Mining Stock Board this week. The market, however, is nominally unchanged and dull, with a tendency toward improvement. The sales during the week are comprised in a few transfers of Lacrosse on the 8th inst., amounting to 1000 shares at 18a19 cents per share, and on the previous date 1000 shares of Black Hawk changed hands at 40 cents.

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DEPARTMENT OF POPULAR SCIENCE.

Insensibility of the Human Body to Molten Iron.

PARTLY prompted by his own experiments, partly caused by his friends and admirers, M. BOUTIGNY raised the question whether there existed a connection between the spheroidal condition and the singular fact that if the hand be wet, it may be passed through a stream of molten iron or lead without harm. Many months elapsed before the inquisitiveness of the French investigator was satisfied by witnessing such an experiment himself. In asking once among the workmen of a foundry in Paris, whether one of them could toss with his fingers the fused metal, he was not only ridiculed, but shown the door. But, finally, he became acquainted with a metallurgist in the Franche-Comté who promised to investigate the matter. On the 26th of March, 1849, this person was able to write: "The workmen generally laughed at me, when I asked them whether they could dip their fingers into molten iron without injury; but at last a workman in the foundry of Magny told me that he considered nothing more easy, and to prove it, he passed a finger through a glowing stream as it was flowing from the furnace. One employé repeated the experiment, and hereby encouraged, I did the same. None made the finger wet."

BOUTIGNY now hesitated no longer to try those experiments on himself, and he was not only able to perform the same feat, but he passed his hand through a stream of cast iron of two inches thickness, when it shot from the tapping-hole, and immediately afterwards dipped the hand into a ladle filled with molten iron. If it is asked, he writes, what precautions are to be taken to protect ourselves from the fiery glow, I answer: Banish the fear, and proceed confidently to experiment. The hand is to be immersed quickly, but not too precipitately, into the fluid metal. This is all that is to be observed. The wonder of antiquity has thus been explained and shown to be only a physical phenomenon. It is well to have the hands moistened, yet the involuntary fear that will overcome any one at the thought of such a bold undertaking nearly always gives rise to a perspiration, by which every part of the body will become sufficiently moist. But, if one will get perfectly invulnerable, the hand is to be rubbed with soap, so that it obtains a smooth surface, or it is dipped into a cold solution of sulphurous acid in sal-ammoniac, or into water containing sal-ammoniac, or simply in cold water.

If the finger is first dipped into alcohol, a tolerable warmth is felt, if moistened with ether, a pleasant coolness. Yet, being very inflammable, these fluids should not be made use of in experimenting with iron. Still, they will not ignite in molten lead. The non-immersed part of the hand will turn red and experience a painful feeling, on account of being exposed to the radiant heat.

Though a great deal had been related of such wonders, it was not till they were placed before the public as naked truths that they commenced to excite sensation. When BOUTIGNY repeated his experiments before Professor PLUCKER in Bonn, the latter, by his own confession, left with the impression that some yet undiscovered laws of nature came here into play. Soon after it was reported that a mechanic in a machine-shop in Cologne had made the trial with molten iron, and had offered himself to repeat it. In consequence thereof, PLUCKER, accompanied by several persons, started for that city, where the workman, in their presence, touched quickly with the dry ends of his fingers the surface of a mass of fluid metal that had just left the furnace. Encouraged thereby, the bystanders themselves began to manipulate. One dashed the flat and previously-moistened hand with such vehemence against the molten iron that a portion of it was splashed around; another ladled the metal with the hollow hand. PLUCKER himself dipped the index finger of his right hand into the fluid, withdrawing it again uninjured after moving in it for a few seconds. He felt how the iron *fled* from the finger but experienced no sensation of heat. He would not have estimated the temperature of the metal as being at 85 deg. F., albeit it must have been at about 2,750 deg. F. The little hairs had disappeared from his finger, but the nail had not suffered in the least. Finally, an experiment was tried, that properly ought to have preceded any other. The finger of a kid glove, moistened inside, was drawn around a wooden stick, and then kept for one minute in the fluid metal. On withdrawing it, the glove only indicated a temperature of 158 deg. F.

The testimonials in behalf of these puzzling accounts increased from all directions. Professor ROSE stated that thirty years ago, during a visit in a metallurgical establishment in Avestad, Sweden, he saw a workman who, for a small remuneration, threw molten copper against a wall, which he skimmed off from a crucible with his hand. DUMAS called attention to a very old usage, ordinarily performed in glass-works. A molten mass of glass is poured into a vessel filled with water, in which, although glowing, it is kneaded with both hands.

In a lecture which BOUTIGNY delivered in the Academy of Sciences, in Paris, on the 14th of May, 1849, he said: "After a lapse of ten years, it was permitted to me to produce ice in a white glowing furnace, and to bathe myself with impunity in glowing cast iron. The great importance which a thorough study of the spheroidal condition possesses may be denied, if one choses to do so; the part which it will sooner or later play in science may be denied, but that I shall not care for. I have formerly stated that mention of this condition is made in the Bible, and many other accounts seem also to prove that the ancients possessed a more extended knowledge of calorics than is generally supposed. They were, perhaps, ignorant of little things, as for instance of a thousandth part of a degree, but they were certainly aware of the great effects. A certain number of historical statements, which are still considered as being fabulous, may be true. The ancient philosophers knew, perhaps, many facts, of which we have no knowledge. A little more esteem for them would not be out of place." AD. OTT.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I.—It is believed that several names of members and associates elected at the Bethlehem meeting in August, 1871, have been accidentally omitted by reason of the loss of a portion of the records of that meeting. Such persons or their friends are requested to communicate with the Secretary.

II.—All members and associates who have not paid their dues, are requested to do so at once, by sending in postal orders, or check or money, ten dollars to the Secretary.

All members and associates who pay their dues for each current year, strictly in advance, will have sent to their address regularly and weekly, the ENGINEERING AND MINING JOURNAL, which is the organ of the Institute, and will contain the proceedings and transactions, and all important papers read before the Institute, and all notices of meetings. Back numbers cannot, as a general rule, be sent.

III.—It is expected that the more important papers read before the Institute, and the debates thereon, will be published in annual, or semi-annual volumes, to which those members and associates will be entitled who have paid their dues.

IV.—Authors of papers are requested to notify the Secretary in advance of the meetings, giving the subject and length of their papers. Attention is also called in this connection, to Rules 12 and 13.

V. The next meeting of the Institute will be held in Philadelphia, beginning on Tuesday, February 20, 1872, at 8 P. M. The Council will meet at 3:30 P. M. of the same day. Messrs. LESLEY, DROWN, BLANDY, FRASER, GAUJOT, and LYMAN are the Local Committee of Arrangements. The sessions will be held at the University of Pennsylvania, in Ninth street, above Chestnut, and the headquarters of members will be at the Bingham House, corner of Eleventh and Market streets.

Communications, suggestions or questions may be addressed to

T. M. DROWN, 209 South Sixth street, Philadelphia.
J. F. BLANDY, 410 Walnut street, Philadelphia.
B. S. LYMAN, 135 South Fifth street, Philadelphia.
PERSIFOR FRAZER, Jr., 139 South Fifth street, Phila.
MARTIN CORYELL, Secretary, Wilkesbarre, Pa.

Explosion in the Henry Colliery.

MOST of our readers will probably have seen in the daily papers, ere this, notices of an explosion in the Henry colliery, situated near Pittston, Pennsylvania, and worked by the Luzerne Coal and Iron Company.

It is needless to say that many of the deductions which have been made concerning the proper place for the blame to rest, do not, to say the least, seem to be warranted by the facts of the case.

The following account is given of the sad affair:

"Five men descended the shaft for the purpose of laying a new car truck—altering the gauge, it seems. One of them—MICHAEL BARRETT—carried an unguarded lamp, and the flame communicated with the gas and caused a terrible explosion. As soon as the alarm was given prompt measures were taken to rescue the men. JOHN COLLINS happened to be absent from the immediate neighborhood of the explosion and escaped without material injury. ROBERT HAYS was brought out dead, his clothes being torn in shreds and his body badly mutilated. PATRICK MCCULLOUGH was brought out dead and terribly mutilated. His head was torn from his body and his bowels protruded. RICHARD NORRIS, who was the engineer at the head of the slope, could not be reached on account of the foul air, although repeated efforts were made, and it was said that a brattice would have to be built and that there was no material upon the ground for that purpose. It is not probable, however, that he was alive. MICHAEL BARRETT came out alive, but was badly burned, and his recovery is considered doubtful. The shaft is 480 feet deep, and the men were working upon a gangway only about five hundred feeet from the foot.

Another gang of men were working in a different slope and suffered no injury from the accident.

In a recent number of a French periodical devoted to mining interests, we noticed that in fifteen mine explosions, which were rigidly investigated by the Government, the disaster could be traced directly to the carelessness of the men. They generally know when there is gas in a mine, and they know the possible result of exposing a naked lamp to the explosive mixture. Why they blow themselves up by doing what they know they should not do, is a question for the metaphysician rather than for the engineer.

The Cooper Institute Lectures.

THE following lectures are announced to take place in the large hall of the Cooper Institute.

Saturday, Feb. 17th.—On "Life Insurances and Savings Banks," by J. H. VAN AMRINGE, Esq., Professor of Mathematics in Columbia College.

Saturday, Feb. 24th.—On "Corruptions in Free Government," by J. R. HAWLEY, Esq., of Hartford, Ex-Governor of the State of Connecticut.

Saturday, March 2d.—On "Democracy," by Major J. M. BUNDY, Editor of the N. Y. Evening Mail."

These lectures are free to all and have become deservedly popular on account of their instructiveness. They are not usually accompanied by the imposing experiments of which some of our popular lectures mainly consist. The object they are intended to accomplish is the diffusion of knowledge rather than the diversion of a popular audience.

Prof. AMRINGE has spent years in the study of the important questions of life-insurance; and we have no doubt that his lecture will form a valuable compendium of knowledge on this subject, and that it will contain many original and important suggestions for the consideration of those who are, and who should be, interested in it.

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.,
WILLARD P. WARD, M. E.
Editors.

PUBLISHERS' ANNOUNCEMENT.

THE ENGINEERING AND MINING JOURNAL *is projected in the intent of furthering the best interests of the Engineering and Mining public, by giving wide circulation to original special contributions from the pens of the ablest men in the professions. The careful illustration of new machinery and engineering structures, together with a summary of mining news and market reports, will form a prominent feature of the publication.* It is the Organ of the American Institute of Mining Engineers, and is regularly received and read *by all the members and associates* of that large and, powerful society, *the only one of the kind in this country.* It is therefore the best medium for advertising all kinds of machinery, tools and materials used by engineers or their employees.

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The Wadsworth Iron Works.

WE learn upon excellent authority that Mr. PARDEE, the well-known coal operator and the munificent founder of the scientific department of Lafayette College, has purchased the Wadsworth Iron Works at Buffalo. These works are among the largest in the country, comprising two blast furnaces, with merchant mills etc. We understand that Mr. PARDEE succeeded in closing the purchase just in time to forestall one of the largest coal and transportation companies of Pennsylvania, which greatly desired the same property.

We have no doubt that in the strong hands of Mr. PARDEE the productiveness and the fame of these works will be increased rather than diminished. We trust that, in addition to the branches of the iron industry already carried on, he will take immediate steps to occupy this favorable position with the manufacture of Bessemer metal.

The advantage of Buffalo for such a purpose are not exceeded. It can receive on the one hand by cheap transportation the Lake Superior ores and the Indiana coal, while on the other hand it commands a large interior and Eastern market. These facilities are inherent in its location, and cannot be taken away by competition of any kind.

One of the Lake Superior papers, by the way, complains that in a recent communication to this journal, on American Bessemer pig-irons, the good qualities of the Marquette ores were overlooked; and appears to believe that some conspiracy exists, by virtue of which the press ignores Lake Superior. This is of course absurd. The ENGINEERING AND MINING JOURNAL has repeatedly called attention to the fitness of the Lake Superior ores for the Bessemer process. We did this as long ago as 1868 and 1869.

But it happens to be true that the communication referred to did not allude to Lake Superior—possibly because it had another subject in view. We trust that our dissatisfied friends by the Lake will take comfort in the declaration which we hereby make, that we think their pure hematites are the most promising material this country affords for the manufacture of Bessemer pig. And heartily we hope, that the truth of this opinion may be demonstated at Buffalo.

Rolling Mill Machinery.

THE lecture upon this subject, delivered on Thursday evening in the technical course of the Stevens Institute, Hoboken, by ALEXANDER L. HOLLEY, Esq., was, like the preceding lecture by the same distinguished engineer, on the Bessemer process, a model of clear, condensed and complete statement, equally valuable, in our opinion, as giving to students a comprehensive view of a most important branch of mechanical engineering, and as setting before them an excellent example of the proper presentation of such a subject to such an audience. We are unable to reproduce it in full, becauss we could not do justice to it without the numerous diagrams with which it was illustrated; and we must explain, moreover, that our reporter, in attempting to take running notes, found himself defeated by the alternate lowering and raising of the gas-light, as these diagrams were thrown upon the screen by means of the magic lantern. The following outline, however, is good, as far as it goes, and may be relied upon as giving a correct notion of the scope and drift of the lecture.

After some introductory remarks on the industrial and commercial sphere of the rolling-mill, the lecturer proceeded to show that the improvement in rolling-mill machinery has been gradual, without such startling novelties as characterize the Bessemer practice. Yet these improvements mark a great advance, which may be seen, first, in increased capacity, due to larger size, better proportions, stronger materials, and particularly to better workmanship in construction and finish of machinery.

Another improved feature is seen in the contrivances by which the rolls work both ways, obviating the necessity of drawing back the bar over the top roll, after each pass, at a loss of half the time and much heat. This is done sometimes (in England) by reversing the motion of the rolls; but the 3-high mill is a better device for this purpose, avoiding the shock and delay of reversing. BROWN'S double mill, recently introduced in England, the 4-high mill, and the 3-high mill set on end, seem to be more cumbrous arrangements for doing the same thing. The American 3-high mill, as perfected by the FRITZ brothers, of Pennsylvania, is the best and most complete, as well as the simplest.

A third important improvement in rolling-mill practice was the utilization of waste furnace-gases under the boilers; a fourth, partly superseding the foregoing, the use of the Siemens gas-furnace, and the conduction of the waste gases through a regenerator, to utilize their heat. This apparatus reduces the fuel per ton of ingots or rail-piles heated from 800 or 1,000 lbs. of coal to 300 or 400. But separate firing under boilers is necessary, which reduces this economy somewhat. There is, however, another gain in the avoidance of oxidation, secured by the maintenance in the Siemens furnace of a neutral or carbonizing flame.

A fifth grand improvement was the application of independent and direct-acting engines to the different trains, saws, punches, and shears. Some modern rolling-mills have eleven distinct steam-engines. But the old practice, with its complicated gearing, ponderous, slow engines, and danger of total stoppage by trivial breakage, still obtains in England. A special gain in the modern style is the practibility of greater piston speed.

Finally, many valuable improvements have been made in the shaping of roll grooves, in devices for feeding and delivering of the bar. Such are the hydraulic lifting-tables, used for heavy work, the mechanical arrangements for turning the bar, the guide for loosening or peeling the bar from the groove, and notably the suspended and counter-weighted guide (one of the numerous FRITZ improvements), on which simple apparatus turns one of the great advantages of American over English practice, namely, the grooving of the top roll in a 3-high mill, which permits a greater number of grooves in the same length of roll (7 to 5), and does away with the necessity of turning the bar over by hand after every pass, in order to remedy the formation of fins. Yet, there is not a hanging guide in all England, and no English rolling-mill can have grooves opening downward, because their only style of guide is one that demands a groove in which it can lie by gravity!

With the aid of rapidly shifted diagrams upon the screen, the lecturer reviewed in detail the different varieties of rolling-mills and their separate parts, dwelling chiefly on the rail-mill as the highest form. The two systems—the fixed roll with closed grooves, and the plain rolls, screwed together at each pass—and their combination in the blooming mill, etc., were discussed, and the novel 3-high machine introduced last year at the Troy Steel Works, which has fixed top and bottom rolls, and a middle roll raised and lowered by screws, was described. This mill possesses many labor-saving and convenient improvements; and the modesty of the lecturer prevented him from saying what his professional brethren all admit, that they are largely due to the great ingenuity and patient skill of Mr. HOLLEY. He awarded deserved praise to Mr. FRITZ for the contrivances by which the severe labor of handling heavy, glowing bars and ingots is performed with steam power instead of by hand; and, without wishing to detract one iota from this praise, we cannot but feel that Mr. FRITZ ought to deliver a lecture and do justice to HOLLEY. In either case, a worthy subject finds a worthy eulogist.

The new Bethlehem mill, Ramsbotham's (English) blooming-mill, the Universal mill, and other varieties were compared and criticized, and the lecturer proceeded to make some suggestions upon the general grouping and interior arrangement of such establishments. Plans of several of the largest American works were exhibited and commented upon. We wish that all capitalists and constructing engineers could have listened to these thoroughly wise and admirable criticisms. One passage, which we have caught entire, characterizes to the life the prevalent looseness in this respect:

"A usual and very bad method of designing rolling-mills is to lay down simply the general positions of the walls, furnaces, train and engine, and to allow 'about so much room' for the rest. When the mill is done, some of the doors are wrong; the cranes do not reach; the saws will not take extra long bars; the presses and punches interfere with the hot and the cold beds; things are in the way of one another, and there isn't quite room enough for *anything.*"

In conclusion, the lecturer impressed upon the

minds of the students whom he addressed the important lesson that in this branch of manufacture perseverance and faithful study of difficulties are worth far more than mere ingenuity or spasmodic enthusiasm, remarking that more money has probably been sunk in iron-working machines that *wouldn't* work than in any other branch of mechanical engineering.

Our imperfect sketch will serve but to tantalize those who did not hear Mr. HOLLEY for themselves. We trust he will consent to repeat this excellently written and beautifully illustrated lecture; it ought to be given at every technical school in the country; for it conveys information which few instructors possess and no books contain. We cannot forbear to mention, as an instance of the power of a clear and forcible statement to command attention, that the ladies in the audience on Thursday night, whom we do not suspect of having any direct acquaintance with iron manufacture, seemed, nevertheless, to be as deeply interested as any of the experts. In fact, such themes have a fascination for all classes of intelligent people. It is one of the noteworthy signs of the times, that as the purely literary or amusing lectures decline in popularity, the public patronage is increasingly bestowed upon oral expositions of science and arts; and experience shows that from masters of such subjects and of "the art of putting things," the public will stand a much higher order of intellectual food than it has been the fashion to serve out.

Systematic Preparation of Mineralized Ores by Dry Crushing and Concentration.

III.

IN order that this system may be presented to the reader in a compact form, the several parts of which it is to be composed are now set forth, viz.:

(1.) The fragmentary reduction of the ore at the mouth of the mine, by the most approved machine—the BLAKE stone breaker.

(2.) The handling of the broken ore through a dryer heated by the waste products of steam power, and its automatic delivery to the next operation.

(3.) The employment of the most approved crushing apparatus, improved by STEPHEN R. KROM, and especially adapted for comminuting ores for concentration—steel-clad Cornish rollers.

(4.) The use of elevators, when required, working in connection with a series of sizing sieves, as improved by STEPHEN R. KROM.

(5.) The employment of air as a medium for concentration, by means of a contrivance or machine invented by STEPHEN R. KROM, embracing the essential features of—

(*a*) Portability and adaptation to any locality where power can be used for raising, breaking, and crushing the ores.

(*b*) Economy in space and attendance, with freedom from climatic obstruction or delays.

(*c*) The minimum of mechanical deterioration, whilst the construction permits indefinite extension under the same roof, the medium being air instead of water.

(*d*) Low average cost per ton of ore separated; low average ratio of cost per ton in plant, and low average cost per ton in waste of valuable metal in the off cast.

THE ROCK BREAKER.

The machine intended for this initial step is too well known to require any endorsement. The principle patented in the Blake machine has, as yet, withstood all attempts of subsequent inventors of combining it in mechanical forms of their own, and although the machine might, with advantage, be made somewhat lighter and more portable when intended for use in distant territories, where transportation is very high, yet, as it is now manufactured, it is as efficient, durable and economical, when at work, as if it were mechanically improved in these particulars.

The Blake machines are manufactured of five sizes, especially with regard to the capacity of the in-take—two sizes take rock 10×5 or 7 inches, and three 15×5, 7 or 9 inches. The first two require six-horse power, and four cubic yards of broken stone are claimed as the product of each per hour; revolution, 180 per minute; material, road metal.

The construction of works employing this system, as already intimated, need not be controlled by any other pre-requisite than sufficient space and convenience of location immediately about the shaft or other exit of the mine, hence these machines may be so placed as to take work from the throw of the hoisting bucket, or from the dump of the tramway, necessitating but one handling from the pile to the machine. The above estimate of product of the smaller sizes is 126 tons per day of twenty-four hours—ordinary rock broken to the size of road metal—revolutions, 180 per minute. Assuming that the generality of ores are neither harder nor materially more tenacious than this material, the same product in quantity could be calculated upon of like grade in fragments. Ores, however, intended for finer division subsequently, should be reduced by the breaker to a very much less coarse condition. This can be done by adjusting the *bite* of the outlet sufficiently close to produce the grade required—of course reducing the product of the machine proportionately. Whether this finer product had not better be produced by a second machine with a revolution, and *bite* of, say, 600 to the minute, and taking feed from the first automatically, or by coarse crushing Cornish rollers, is a question to be left to the exigencies of each case. In either case the cost of breaking the ore to the grade wanted will not be materially different, and may be estimated on the basis of one machine.

Items—Cost of horse-power per twenty-four hours, 50 cents; wages, $2.50, four men. Cost of 126 tons, $13, or 10⅓ cents per ton, not including oil, repairs, etc.

Doing one-quarter this quantity to a finer condition, power the same; but two men would be employed, say 30 tons, cost 26⅔ cents per ton. Add for oil and wear of iron 3½ cents per ton, the cost incurred would be 40 cents, on a liberal scale of estimate.

DRYING THE ORE.

Previously to breaking the ore into small fragments, it is not essential, nor would it be economical, in any sense, to subject the mass to a drying process. After being broken up, this can be done more perfectly and automatically by various devices. The drying *must* be done, as well for the subsequent reduction to a finer grade as for the work of concentration. Whatever cost is incurred by this step is more than counterbalanced by the increased quantity produced per hour ready for the concentrator, and what is more important, with safety to the rollers. Instead, therefore, of involving an intermediate item of expense, the drying becomes, in itself, a source of economy. Many devices could be suggested for doing the work of drying readily, and perhaps economically; but in view of the automatic construction, and the fitness of each operation for what precedes, as well as that which follows, the designer of the system proposes a method comprehending both suitableness and economy. The Sturtevant fan-blower and air-heating apparatus—the air heated by the waste or exhaust steam—affords the readiest means of transmitting heat, as well as the evaporating vehicle, hot air, where it is wanted, and in a shape to be most effective. This contrivance being located in any convenient part of the engine room, the heated blast is directed through a stationary cylinder of iron, in which a revolving purveyor pushes slowly and regularly, whilst constantly stirring the same, the fragments of ore to the hopper of the next machine for crushing. The time required for this purpose is to be regulated by the fixed length of the cylinder and the speed or revolution of the purveyor. The feed aperture being located under the drop of the crusher no handling of the ore is required. Entering the purveyor in such quantities as regulated, the ore is stirred and pushed amidst a blast of heated air until it reaches its destination. The power used for the blast and the purveyor measures the expense incurred. The cost of breaking and drying will not exceed 50 cents per ton whilst placing the ore ready for the next operation—the crushing rollers.

G. W. BAKER.

Antimony in Nevada.

TO THE EDITOR—Sir: In the following I have embodied some facts in relation to an interesting occurrence of antimony ores in Nevada:

The mines are situated in Humboldt County, 12 miles south of Battle Mountain, a station on the C. P. R. R., 540 miles east of San Francisco, and 360 west of Ogden and Salt Lake City.

There are two parallel veins, about 100 feet apart, one of which has been prospected. Both crop out for over a mile, commencing at the top of a ridge, where the "Mountain King" shaft has been opened, running downward about 1,000 feet in a distance of 1,500 feet north, where they cross a cañon or gully, and thence rise on the opposite ridge, where another shaft, the "Columbia," has been sunk to a depth of 93 feet, at a point about 80 feet above the cañon.

The "Mountain King" shaft is 15 feet deep, and exhibits from surface to bottom, and in the bottom, a continuous vein, two feet thick, of solid sulphuret of antimony. The vein is perpendicular, and has well defined, regular walls, clearly cutting the country rock.

In the "Columbia" shaft, the vein is not so regular or well defined, but still contains, in a width of four feet, fully two feet of solid ore, sometimes in a body, sometimes divided in two or three strings by intervening horses. From the excavation 3,750 cubic feet of rock was removed, which furnished 150 tons of clean ore, being at the rate of one ton per 25 cubic feet. Of this ore, 50 tons have been removed and sold or used, while 100 tons are on the dump.

The ore from the "Columbia" shaft is an intimate mixture of sulphuret and oxide of antimony, quite free from any other mineral or metal. A careful analysis of a fair average sample of the ore, rough dressed, resulted as follows:

Moisture	2.82
Alumina (clay)	1.58
Silica	12.62
Antimony	62.28
Bismuth	6.63
Sulphur	15.31
Oxygen (calculated)	4.06
	99.30

A specimen from near the surface, at the "Columbia" shaft, assayed 3 oz. silver per ton; one from the bottom of the shaft, 20 oz.; and one from the "Mountain King" shaft, 19.5 oz.

Mineralogically, the ore consists of

Blue Sulphuret of Antimony	56.71
Yellow Oxide	29.09
Quartzose Gangue	14.20
	100.00

These mines are peculiarly interesting on account of the singular purity of the ore, since the absence of lead and copper greatly facilitate the production, by the simplest reduction process, of an excellent quality of regulus of antimony. This was fully proved by an experiment which I made at the works at Battle Mountain Station, smelting the ore in a reverberatory, with native alkali as flux, and fine coal as the only reducing agent, and thus producing, in one operation, from crude ore, metallic antimony, several tons of which were shipped to New York and sold to consumers for various purposes. All who have used it pronounce it equal to the imported refined regulus; although some of the pigs were not quite free from sulphur.

The details of the smelting process I do not wish to make public, but that it is inexpensive, appears from the following facts: The furnace, of a capacity to hold only a ton of melted ore, could work this off

in twelve hours, producing 800 to 1,000 pounds of metal from 2,000 pounds ore. Fifty per cent was the best yield I could obtain, and this only when the furnace worked to perfection. The consumption of coal was 1 ton in 24 hours, the fine coal sifted from which was used as the reducing agent, mixed with the melted ore.

The loss of metal by volatilization was quite insignificant, and nearly the whole loss was due to the difficulty of keeping the antimony out of the slag. Several times, from an error in the working or in fluxing, nearly all the metal was scarified, nor could I succeed in reducing it again from the slag, at least in the reverberatory.

Mining the ore costs, by contract, $2 per ton. Hauling from the mines to the station, by job teams from a livery stable, costs $4 per ton. Freight to San Francisco, $10 per ton. To England, via Cape Horn, say $15 per ton, meaning always the short ton of 2,000 pounds. The ore is worth in England from £12 to £15 per miner's ton, of 2,352 pounds, equivalent to about $50 a $62 for 2,000 pounds. The regulus is worth from 12 to 14 cents per pound.

From these figures it is apparent that a mine of base metal exclusively—for the silver in these antimony ores is too insignificant to be regarded—in the Pacific States, may return quite handsome profits, and be more desirable property than mines of silver or gold not strictly "first class."

WM. L. FABER.

About-Town Jottings.

THE STONE WALL.

IT is to be regretted that, in the efforts for reform and retrenchment in New York city by the "Committee of Seventy," the work upon our water front is likely to be interfered with. From the outset, Gen. McClellan has given this matter his entire attention, and the plans for girding our city with a permanent stone wall, from which piers may be erected into the stream, have been carried out with a dispatch which those in charge of other works would do well to copy. It is a gigantic enterprise—one well worthy of the metropolis of the nation, but it can never be successfully accomplished if it is to be mixed up with the other departments of the city as is now proposed. This work was called into being at the earnest entreaty of the commercial classes of the city. They are to pay the interest on the cost, and naturally have a desire to see this great work kept as free as possible from all political control or partisan interference.

BUSINESS CHANGES.

Mr. E. D. WOOD (formerly in charge of the N. Y. office), has retired from the Utica Steam Engine Co., but otherwise the company remains unchanged. Mr. S. F. BAGG fills the position made vacant by the retirement of Mr. WOOD.

MESSRS. POST & GODDARD have removed to No. 111 Liberty street. By Saturday's steamer they forwarded a large shipment of the Helical Hand Drill to Mr. MEIGS, the railroad king of South America.

BERGEN HILL CUT.

Work on the cut through the solid ledge at Bergen Hill, N. J., on the line of the Newark and New York railroad, has been continued all winter, and rapid progress made. The Burleigh Rock Drill Company furnish the boring machines. When completed, this cut will be used by all through trains on the Central (N. J.) railroad.

The SMITH & SAYRE Company, 95 Liberty street, are building an entirely new style of blower, which will shortly be offered to the trade.

BUSINESS AND PERSONAL.

Personal announcements and business notices, inserted in this column, at fifty cents per line.

Geo. F. Blake & Co., 79 Liberty street, Steam Pumps of every size and capacity, for all purposes.

Utica Steam Engine Co., (formerly Wood & Mann Steam Engine Co.), 42 Cortlandt street, N. Y.

Post & Goddard have removed to No, 111 Liberty street. Dealers in Taps, Dies, Reamers, Drills, and supplies generally.

Peteler Portable R. R. Tracks and Cars. Miners and contracters, send for circulars, 42 Broadway, N. Y.

American Submerged Pump. Power attachment—cheapest and best in the market, 55 Chambers st. N. Y.

Baxter Portable Engine, 18 Park Place, N. Y.

H. R. Worthington, 59 Beekman st., has for sale all the machines built by the Hydraulic Works Brooklyn.

Blasting Powder, safety fuse, etc., furnished by Laflin & Rand, 21 Park Row, N. Y.

Roper Caloric or Hot Air Engine, 124 Chambers St.

Geo. F. Place & Co., have removed to 121 Chambers street.

Blake Bros., New Haven, Conn. manufacture Stone Breakers for crushing ores and minerals of every kind into small fragments, preparatory to their further comminution by other machinery.

Chas. S. Parker is the only special advertising agent connected with the "JOURNAL."

MINING SUMMARY.

California.

We copy from the *Stockholder* of Feb. 6 the following statistics showing the production and export of

QUICKSILVER

in 1869, 1870 and 1871. The production reached the following figures:

	1869. Flasks.	1870. Flasks.	1871. Flasks.
New Almaden mine	17,000	14,000	18,763
New Idria mine	10,450	10,000	9,227
Redington mine	5,000	4,516	2,128
And sundry other mines	1,150	1,000	1,763
Totals.	33,600	29,546	31,881

The exports to different countries for 1871, and the three previous years, were as follows:

To	1868.	1869.	1870.	1871.
New York	4,500	1,500	1,000	800
Great Britain	3,500	...	....	....
China	17,785	11,600	4,050	7,900
Mexico	14,120	8,060	7,088	3,081
South America	2,500	2,900	1,300	2,200
Australia	1,580	300	300	1,100
British Columbia	20	4	9	6
Other Countries	501	51	41	118
Total flasks	44,506	24,415	13,788	15,205

And our exports previously have been:

	Flasks.		Flasks.
In 1867	28,853	In 1859	3,399
In 1866	30,287	In 1858	24,142
In 1865	42,469	In 1857	27,262
In 1864	36,927	In 1856	23,740
In 1863	26,014	In 1855	27,165
In 1862	33,747	In 1854	20,963
In 1861	35,995	In 1853	12,737
In 1860	9,448	In 1852	900

"The Redington Company," says the San Francisco *Market Review* newspaper, "has produced nothing since October 31st, and the Phenix Mine has produced during 1871, 763 flasks, from a partial working of the mine. The entire product of all the mines on this coast for the year 1871 aggregates 31,881 flasks, against 29,546 the year previous. High prices under the monopoly rule have been kept up for three years past. The three year contract purchase expires on the 1st of April next, when a complete change in the programme may be looked for. Already shipments from London and New York are en route to this coast, and lower prices may be looked for at any moment. Present nominal prices, 82½@85c."

ALPINE COUNTY.

The Alpine *Monitor* of Jan. 13 says:

The Monitor mill will be ready to go to crushing quartz on Monday next. The whole works would be started if the quicksilver were here, and judging from the quality of sampled ore now going into the ore-house, if the roads had been in order for the incoming of supplies and hauling of ore to the mill, it would not be long before bullion would be produced. From a drift in the upper works, where a large lot of promiscuous ore and rock has lain for some time awaiting the chute, considerable fair grade is being run out. Also from several points in the face of drifts above and below different grades of ore being mixed. A big effort will be made next week to get the delayed supplies in and put the mill at its regular work. It will be expensive for a while to haul the ore to mill, but the management feel that they must fly somewhat in the face of fates and the weather, and grind out bullion even if at reduced profit.

Arizona.

The *Miner* of Dec. 23 says:

We have cheering news from every locality in the Territory where quartz mines are bing worked, and a good fall of rain or snow would enable us to chronicle some big results from placer mining.

The quartz miners of Yuma and Mohave counties are busily engaged, getting out ore. Yuma county will soon have another mill, that which Mr. BORGER is bringing out, to work ore from the Constantia mine, near Ehrenberg. The miners of Castle Dome are still taking out ore and shipping the same to San Francisco.

In Mohave county, a five-stamp mill is being run, with what success is not known to us. The county is filling up rapidly, with miners and prospectors.

We have no news from the new mining district on the Gila River, Pima county.

At home, in Yavapai county, the Vulture Company's forty-stamp mill, near Wickenburg, is still busy freeing gold from its matrix. At Bradshaw every lick struck upon the Tiger and Lorenna lodes exhibits ore of wonderful richness.

In Pine Grove District, JACKSON & Co. have been doing well, and have had the good fortune to strike abundance of water to run the mill 14 hours every day, with a fair prospect of soon having more than enough water to supply it all the time. J. M. NELSON who has been running the mill and amalgamating, came to town recently and showed us a ball of gold, worth $260, which he had saved from a twenty-three hours run on Del Pasco ore, and this was the first attempt at amalgamating.

The Benjamin and its "sister" silver lodes near Prescott are growing better as fast as developed.

Nevada.

EUREKA DISTRICT.

Eureka Correspondence of the Reese River *Reveille*, dated Jan. 15.

We are just now beginning to feel the financial effects of the starting up again of the

CONSOLIDATED FURNACES,

which are now sweating out through their syphons daily sixteen tons of base bullion. In fact all our running furnaces are from their daily productions so satisfactory that a new impetus has been given to our town, which is plainly obvious to the most casual observer, and it is confidently predicted that within the next four months upwards of

FIFTY TONS OF BULLION

will be our daily shipment, which prediction I firmly believe will be more than fulfilled.

THE M'GEARY MINING DISTRICT,

situated twenty-five miles north of us near Garden Pass, discovered some two months since, is fast wheeling into the ranks of our first-class ore producing districts. Eighteen claims are now being prospected, showing already some well-developed lodes, varrying in width from six inches to fifteen feet. The two most noted ones at present are the Josephine and Little Frank, in which ore is found that assays $200 in gold and $95 in silver. About forty men are already at work in this district which has a plentiful supply of wood and water. The ore is principally milling. A town site has been laid out and a road will be built to it immediately as it is on a direct line between this place and Palisade. The discovery of this rich belt of mineral within the boundaries of old Lander's domain will materially assist in keeping up the reputation she has heretofore borne as a silver producing county.

THE I. X. L. MINING DISTRICT.

From the Gold Hill *News* of Jan. 15.

We were yesterday shown several pieces of ore from this recently discovered mining locality, near the Lower Sink of Carson river, by a gentleman just arrived from there. The ore is principally of a chloride character, containing also black sulphurets, and is evidently rich in silver, some pieces showing specks of free gold, visible to the naked eye. Considerable prospecting and developing work is being done, and our informant was quite enthusiastic as to the future bullion yields when the requisite mills are supplied for crushing the ore. He says one or two mills will be erected there next Spring or Summer. The *Alta* of Friday gives the following information: "The I. X. L. mining district is situated in Churchill county, Nevada. It was discovered last September by some miners of that county, and promises to exceed White Pine, both in richness as well as width of ledges. The common hand arastras are yielding good wages—a facility none of the previous discoveries in that State have ever afforded to the poor miner to any great extent, and their hard-earned locations have heretofore generally been worthless unless taken hold of by capitalists. It is apparantly easy of access, being only about 60 miles east of Wadsworth, at the foothills of what is known as the lower sink of the Carson, with plenty of wood, water and grass handy and almost entirely free

from those rigorous Winters which characterize most of the Nevada mining camps. This is, doubtless, the place where the Spring excitement will drift to, and will probably be the scene of many fortunes and disappointments during the coming Summer."

Colorado.

The Central City *Register* of Jan. 31 has the following

GEORGETOWN ITEMS.

Most of the road between Georgetown and Central is, very good. Upon about a mile of Virginia Canon, and as much more on the heads of Russell Gulch, the snow is very heavy. The price for hauling ore to the smelting works is $18@$20 per ton. We have every reason to believe that in the spring large smelting works will be commenced at the forks of the creek below Georgetown, to be built by English capitalists. The amount of ore being hauled over to Black Hawk is falling off somewhat of late, owing to the fact that some of the mines are not producing so largely of late and some operators are reducing their force in view of the tremendous tariff for hauling and reduction.

STEWART, of the Stewart Reducing Works, lately burned, is at work when the weather will permit, removing the debris and cleaning up the pan room, in which he estimates there were some $6,000 worth of amalgam and quicksilver. He is making every preparation for rebuilding, and we learn contemplates the erection of a smelting furnace in connection with his other works.

PALMER & NICHOLS are running as steadily as the weather and machinery will permit, and are doing excellent work. We saw one bar just out of the moulds worth some $1,600 coin, that was 923 fine. Considering the amount of base metals in the ores these gentlemen work this result is very hard to beat. It is a pity they have not a ten cylinder mill with which to operate, as they have shown themselves capable of handling a large establishment successfully. If they can succeed and prosper with such a mill, what might not be expected if they were in charge of a complete establishment. Within one hundred and eighty days, or about one hundred and thirty days working time, they have extracted $100,000 in silver that has averaged 850 fine.

Idaho.

From the *Statesman* of Jan. 9.

THE NORTHERN MINES.

Early in 1861 the attention of the masses was first attracted to the Oro Fino district; in the summer of said year, the Elk City district became an attraction. In August of the same year the first discoveries were made in the Florence basin; and early in 1862, the Warren's district was first made known; since which time the Millers camp, Palouse, Gnat creek, Moose creek, Newsome creek, Clearwater Station, the bars of Salmon and Snake rivers have had their attractions, all of which camps have been worked to a greater or less extent ever since their first development. The summer of 1862 witnessed the presence of the largest immigration to the Florence district, and the remarkable yield of that district in 1862 and 1863, is generally well known to the whole country.

In 1863 the discovery of rich mines in the Boise basin, caused much of the larger portion of the miners, then in the Northern districts to drift South of the Salmon range so as to be among the first to select the best locations in the new district, and the early disclosed richness of the new district, and its continued prosperity held them fast, till, with few exceptions, the last tie which bound them to the Northern districts had been severed. New developments and new enterprises, combined with the continued success of the first discovered camp of Boise have bereft the Northern camps of the requisite mining population and mining capital and skill essential to the full development of the mining resources of the North. Especially has this been the case in reference to quartz mining.

But nevertheless there has been an annual product of these Northern placer mines, from the period of their first discovery up to the present time, by the labor which has remained, that we think will equal, for each day's labor, that of any other district in the Territory.

As an evidence of this, in none of the camps has the price of day labor of white men in these mines, fallen below the sum of $5, and yet in the majority of cases the employer has made a profit upon said labor.

Within the past two years, Chinese labor has been introduced into several of these camps, and in that of Oro Fino district has proved highly satisfactory to the owners of claims.

Respecting quartz, it seemed to posess no attractions, in these Northern districts until the summer of 1865.

During that summer and fall several ledges were discovered in the Florence district, and many claims were located, and some of them prospected during the following winter, but with unsatisfactory results. In the summer and fall of 1866 about 100 distinct ledges were discovered in the Warren's camp and immediate vicinity, the surface prospects of many of which were highly satisfactory.

But few miners there in the district were conversant with quartz, and the imagination of many was greatly excited as to their richness. But nothing more than surface prospecting of these ledges was done till the fall of 1867. During that fall and the early part of winter several arastras and two five stamp mills were constructed and during the winter and spring of 1867, about 1500 tons of ore was extracted from seven ledges, and reduced for free gold, the average yield per ton ranging a little more than $37. But all this ore had been extracted and milled by inexperienced men, and under the most embarrassing circumstances, from the want of capital necessary to perform what is termed the "dead work" in quartz mining, and these embarrassments had the tendency to produce contentions and strife among the operators, and to destroy confidence in traders and others upon whom they were more or less dependent for credit to push forward their enterprises. The camp has not yet recovered from these embarrassments, though much is still being done by way of developing the fact that many of these leads can, with capital to properly open them, be made productive of profit to the investment. Upward of $125,000 in gross, have already been taken from the few leads which have been worked, and one lead is now being worked with success.

During the past two years several leads have been discovered in Elk City and Oro Fino districts where surface prospecting is fully equal to those of the Warren's creek. In Florence camp one five stamp mill was erected which developed the fact that the quartz of that district is good, though the veins are not numerous, and are smaller than those of Warren's. The mill men became embarrassed and the mill is at present idle.

These districts are so isolated from the great thoroughfares of travel along which men of capital pass in making their tours of observation, that none visit these districts except upon a special mission for the purpose, and these kind of missions are fewer than angels' visits.

In conclusion it is fair to presume that these Northern districts if they do not receive the immediate attention of mining capitalits which their prospects warrant, yet it is to be hoped they will constitute a reserve of rich mining Territory for Idaho, when other portions have become exhausted.

Advertisements.

The special advantages of the ENGINEERING AND MINING JOURNAL, *as a medium for advertisers, are so great and so widely known that it may seem almost needless to call attention to them. It is extensively circulated among the engineers of the country and takes a position in this respect before any other publication of the kind. It has a large and constantly increasing circulation among miners and mine owners, and men connected with mining operations generally. As it is the only paper in the country that makes this subject a specialty it has this field entirely to itself, and is the only direct and reliable means of reaching this class of persons. Being kept on file by almost every subscriber, it is doubly valuable as a permanent means of keeping an advertisement before the public. It is the Organ of the* AMERICAN INSTITUTE OF MINING ENGINEERS, *and is regularly received and read* BY ALL THE MEMBERS AND ASSOCIATES *of that large and powerful society.* THE ONLY ONE OF THE KIND IN THIS COUNTRY. *It is therefore the best medium for advertising all kinds of machinery, tools and materials used by engineers or their employees. It is the recognized organ of the coal trade, and is taken extensively by the trade throughout the country, and presents the very best means of reaching that very important class of men.*

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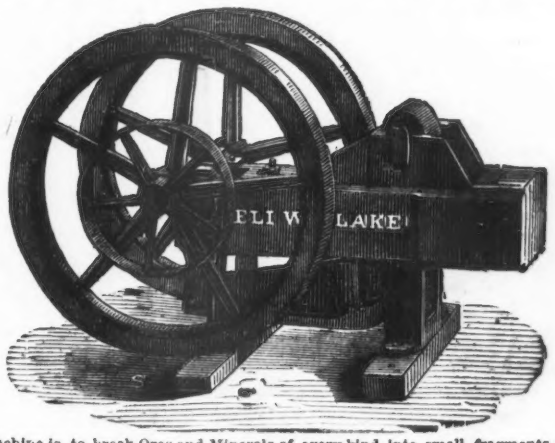

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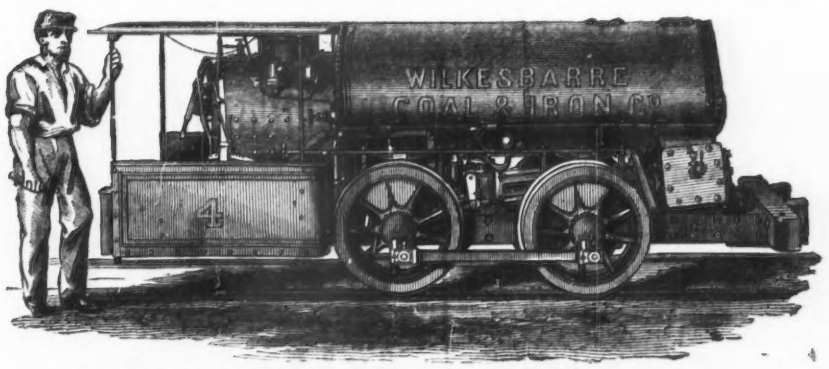

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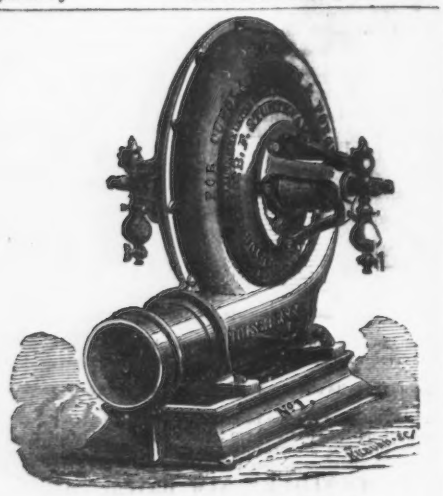

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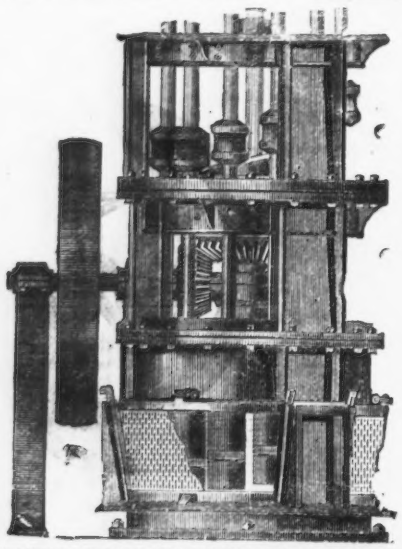

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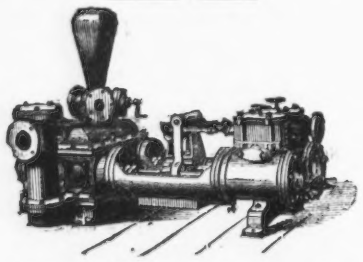

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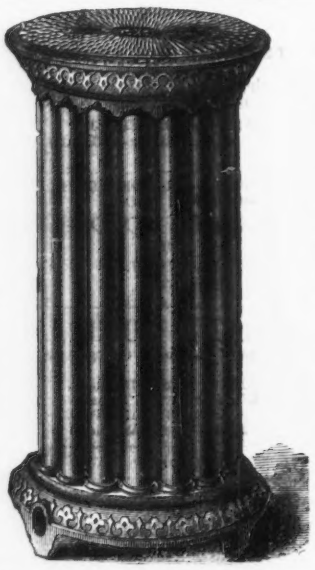

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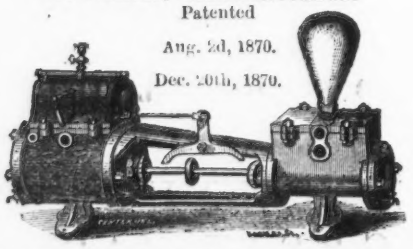

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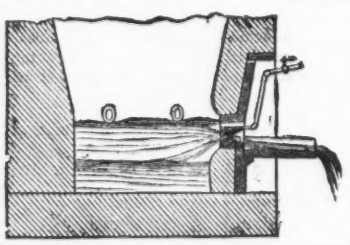

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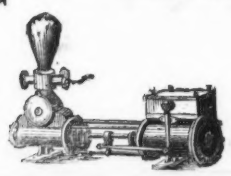

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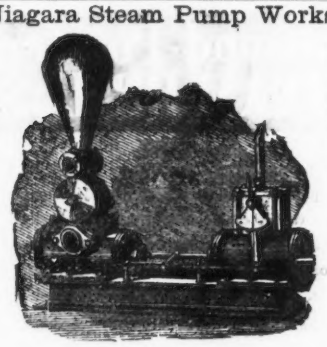

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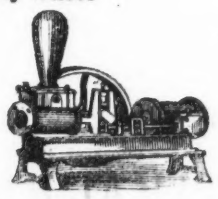

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